CARBON EMISSIONS TRADING IN INDONESIA: AN ANALYSIS OF ITS FEASIBILITY AND RATIONALE

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ABSTRACT

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Over the past decade the United Nations has developed a framework consistent with conserving carbon and biodiversity-rich forests while simultaneously reducing global greenhouse gas emissions. The project, known as REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries), was created as an international framework to halt deforestation, specifically in tropical nations. By valuing forests in terms of their ecosystem services, as opposed to solely their export value, REDD+ aims to encourage financially developing countries to preserve natural carbon sinks and decrease the number of forests converted to alternate uses. Putting a price tag on the role forest ecosystems play in carbon capture and storage allows forest conservation to compete economically with historically more lucrative forest exploitation practices.

The first country to facilitate REDD+ implementation was Indonesia in 2009. As the world's top greenhouse gas emitter from deforestation, degradation, and land-use change, Indonesia has a unique opportunity to achieve substantial emissions reductions at relatively low abatement costs. In 2011, Indonesia and Norway signed a landmark deal stipulating that Norway would pay Indonesia USD $1 billion if the country verifiably reduced carbon emissions stemming from deforestation and peatland conversion. After nearly a decade of ineffective policies and reforms ridden with loopholes, Indonesia finally recorded three consecutive years of declining emissions, beginning in 2017. While this pollution prevention represents a success for the environment, climate change mitigation, and REDD+ stakeholders around the world, there is room for improvement. If Indonesia is to have any hope of achieving its 2030 emissions reductions targets, more extensive reforms and stronger regulatory forces ought to be enacted. This paper discusses the feasibility and rationale behind the current REDD+ offset project operating in Indonesia. The challenge for Indonesia is for such an offset system to achieve economic growth, social equity, and reduced forest cover loss simultaneously. If not, the policy could reveal that the triple-win scenario is rooted in inherently contradictory goals, thus undermining effective policymaking for conserving Indonesia's imperiled tropical forests.

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Part 1: Carbon Markets and How They Work

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) proposed greenhouse gas (GHG) emissions as a possible new trading commodity. By 1997, the first international agreement for limiting GHG emissions was developed, known as the Kyoto Protocol. The Protocol sets emissions limits for 37 industrialized countries and the European community, including limits on carbon dioxide (CO_2) emissions (Kyoto Protocol, 1998). As a result, CO_2 could be traded as a commodity, known as the "carbon market" (Collin, 2011). Two types of true carbon market trading systems were created, "cap-and-trade" and "carbon-offsets." Cap-and-trade (CAT) mechanisms have been more widely used than carbon-offsets, as concerns have been raised about whether offset projects produce their intended results.

Emissions trading is "a regulatory environmental policy to reduce the cost of pollution control by providing economic incentives to regulated industries for achieving reductions in the emissions of pollutants" (Collin, 2011). For CAT, a central authority sets a limit (or cap) on a regulated pollutant. Industries that exceed their limits can purchase emissions "credits" from firms that emit below permitted limits. This transfer of emissions credits is referred to as emissions trading. Every CAT system includes an emissions cap, which limits pollution emitted from all regulated sources. The upper limit could be set below historical emissions rates to induce emissions reductions. Each CAT system also includes allowances, which are an authorization to emit the upper limit on pollution, measurement systems to track emissions, and flexibility for any source to choose how to reduce emissions. Some strategies for source reduction can include transitioning to renewable energy or buying additional allowances from

other sources that reduce their emissions. For example, a firm can buy or sell allowances on the open market. Each CAT system has a compliance process, where at the end of each compliance period every source is expected to have at least as many allowances as it has emissions (Collin, 2011). For a CAT system to work, pollution sources must measure and report all emissions, as without proper monitoring and verification, emissions could be unreported, meaning that excess pollution sources could exist and undermine the legitimacy of the cap.

Cap-and-trade systems seek to harness market forces to create incentives for industries to use more efficient industrial processes that reduce the amount of CO_2 emissions. If a company is able to prevent pollution it can trade its value in the form of credits to other dischargers. Companies with older, more polluting plants can buy carbon permits and stay in business. Buying permits reduces the older company's profits, and thereby provides incentives to invest in less polluting processes in future plant designs. If many companies continue polluting, then the scarcity of carbon permits will increase their price, providing even further incentives for developing processes with fewer emissions (Waskey, 2012).

Cap-and-trade systems have been criticized by some US environmentalists who argue that if firms' emission levels are self-reported, they may or may not be accurate. Some analysts argue that CAT allows polluters to buy out of responsibility for environmental and community impacts, thus widening the gap towards achieving a sustainable society (Collin, 2011). The US has experience with one CAT system, the 1990 Acid Rain Program, to reduce sulfur dioxide (SO_2) emissions causing acid rain problems (Collin, 2011). In response to the new regulations, SO_2 emissions were reduced in a shorter time period and at a cost lower than was expected, marking it as an example of a significant success story regarding CAT (Collin, 2011). The Kyoto Protocol sought to use trading to help developed countries reduce GHG emissions by 5% from

1990 levels by 2012. Emissions reductions stipulated by the Protocol varied by country; in the EU, an 8% reduction in emissions was required (Dernbach, 2010).

The Kyoto Protocol established conditions for the first non-voluntary carbon market by committing certain nations to meet GHG emissions reduction targets and by establishing a framework for allowance trading across international borders. Since the Protocol's international carbon market has yet to develop, regional carbon markets, such as the European Union's Emissions Trading Scheme (EU ETS), the world's largest CAT system, have begun. One Kyoto Protocol provision has endured, the Clean Development Mechanism (CDM) offset program, which has garnered much attention and helped develop the world's largest CO_2 offsetting projects (Newell, 2014). Traditional carbon-offset systems are based on trading emissions between industrialized countries and poorer, less developed countries. Offsets allow industrialized countries to release emissions in trade for preventing emissions in developing countries and compensating them with carbon credits (Waskey, 2012). The CDM extends this premise by encouraging environmentally conscious development, or "clean" development. The CDM's twin pillars are to assist developing countries in achieving sustainable development, while at the same time helping developed countries meet their emissions reduction requirements (Dernbach, 2010). This type of system can run parallel with CAT, in which the cap is intended to set a limit on offsets. Carbon-offset projects generate credits that allow pollution over and above this limit (Waskey, 2012).

The CDM is attractive as an offset trading program due to differences in pollution prevention costs between developed and developing countries. Nevertheless, CDM programs raise a number of implementation and methodology issues. The Kyoto Protocol stipulates that CDM emissions reductions must be "additional to any that would occur in the absence of the

certified project activity." In practice, incremental prevention can be difficult to determine. As a consequence, credits may be awarded for reductions that would have occurred regardless of the CDM project's implementation (Dernbach, 2010). CDM projects that seek to reduce CO_2 emissions through forestry have a challenge to directly determine the exact reductions being achieved. Reductions can only be estimated through calculations based on models and projections, which may or may not be accurate. In contrast, power plants participating in emissions trading are subject to continuous monitoring, and therefore it's relatively easy to determine the actual reductions being achieved (Dernbach, 2010). CDM projects in developing countries are subject to those countries' legal systems, which are often weaker and may be affected by corruption. As a consequence, conducting CDM projects in countries with weak legal systems may be a challenge, as it may be harder to enforce agreements for reductions or guarantee the integrity of reductions in these countries (Dernbach, 2010).

Stanford researchers report that CDM markets may not reduce actual emissions, and that offsets are not likely to be effective cost-control mechanisms (Wu, 2012). Further structural problems affecting offset mechanisms are a shifting of responsibility, perverse incentives, repression and rights violations, and preservation of the status quo (Wu, 2012). By allowing companies and governments from developed countries to buy credits from projects in third-world countries, offsetting mechanisms in effect provide a means of delaying domestic action in these wealthier, industrialized countries (Wu, 2012). Offsets are subject to interpretation of "additionality," where pollution prevention offsets are compared to what would have happened otherwise, offering polluting companies the opportunity to turn unforeseeable future events into present and bankable carbon credits. The net result for the planet is that offsets tend to increase rather than reduce GHG emissions by displacing the need to take action in one location by a

theoretical claim to take different actions in another location. Countries hosting offset projects create a barrier to implementation of environmental regulations, for in doing so would reduce additionality and thus cut potential revenue (Wu, 2012).

The underlying reason for structural problems that undermine offset projects' good intentions is the CDM's premise of dubious equivalences between polluted discharges in very different economic and industrial practices (Wu, 2012). By overlooking the uncertainties of comparison between emissions output in one part of the world and the sequestration of emissions in another, these dubious equivalences ensure the exchange of a single commodity, carbon. The premise does nothing to address the fact that the effects of burning coal are in no way eliminated by building a new renewable energy source or creating a monoculture plantation. Instead, the premise serves to burst the limit that CAT mechanisms create. While CAT limits the availability of pollution permits, offset projects have become a license to print new ones (Wu, 2012). When combined, the two systems therefore tend to undermine each other: CAT sets the cap, but offsets create conditions to lift it. Nevertheless, many CAT programs today allow offset credits to be traded within them, including the EU ETS and California's trading scheme (Wu, 2012).

The commodification of carbon and its subsequent trading, as well as the theoretical attractiveness of CDM projects enabled the "green economy," or "green capitalism," as a way to overcome the negative effects of conventional development, for example by increasing investments in low-carbon technologies, shifting energy-use towards renewable sources, and more sustainable management of natural resources such as fisheries and forests (Anderson, 2016). Agriculture, and its associated land use change, contributes to about a third of the global greenhouse gas emissions. Environmental policy makers encourage landholders to develop more environmentally conscious land use strategies to prevent pollution (Cacho, 2013). The green

economy has manifested itself in many ways, including the growth in corporate social responsibility, the rise of ethical investment, partnerships between conservation organizations and big business, and the rise of green consumer goods (Scales, 2016).

The basic principle of the concept is that the market can provide incentives to companies to operate in environmentally benign ways without curtailing growth. It requires companies to view climate change mitigation strategies as preparation for longer-term business and development opportunities rather than a source of short-term costs (Anderson, 2016). If properly conducted, the implementation of a green economy has the potential to result in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities," according to the UN Environmental Programme (UNEP) (Anderson, 2016). However, in order to separate negative environmental and social externalities from economic growth, a green economy relies on market reforms, industrial advancements, and consumer preference to drive social and ecological change, a principle that a number of analysts have critiqued (Anderson, 2016).

One critique is that a green economy focused on marketable aspects of the environment may fail to address issues of social justice or relations between nature and society. A green economy discourse obscures the role that economic growth per se plays in degrading the environment, and undermines the political will to make substantive environmental reforms. In other words, green economy principles may be only a symbolic commitment to sustainability, and a form of "green-washing" that allow industries or countries to appear proactive in the face of anthropogenic climate change while continuing processes of accumulation and unrestrained resource extraction (Anderson, 2016).

Despite these criticisms, the green economy has continued to gain popularity among politicians and international organizations such as the United Nations Environment Program (UNEP) and the World Bank. For example, in countries with tropical forests, the strongest expression of the green capitalism trend has been the proliferation of Payments for Ecosystem Services (PES) (Scales, 2016). As many land managers around the world are smallholder producers with limited ability to bear the costs of new environmental regulations, PES to landowners directly has become common. As modification of agricultural practices in developing countries can create positive environmental externalities to people living in developed countries, PES can affect economic development and poverty reduction (Zilberman, 2008). In such cases, costs associated with environmental regulation may be diverted from the landowners to the consumers of the environmental service. Landowner participation can yield both opportunity and transaction costs. For example, land use modification may create more sustainable yet less profitable outcomes. Costs associated with contracting, monitoring, reporting, and verifying the environmental service provision can be high (Cacho, 2013).

Payments for ecosystem services are voluntary transactions where prices are set based on the same valuation of ecosystem functions; those who benefit pay the suppliers (Scales, 2016). Forests provide a wide range of ecosystem services, so their carbon storage functions have proved the easiest to define and quantify. In response to these trends, in 2008 the UN launched the Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD). This program enables CO_2 emitters in high-income countries to pay low-income countries to preserve their forests, and thus not release CO_2. UN-REDD therefore offers the prospect of a triple-win scenario, with the potential to create opportunities for economic growth and poverty alleviation, incentives for the maintenance of

biological diversity, and financial support for conservation programs (Scales, 2016). Nevertheless, the commodification of forest carbon, a necessary component for UN-REDD and other PES, has also garnered considerable critique.

It is not easy to quantify and value forest carbon. A commodity that can be easily exchanged should have clear boundaries and property rights, neither of which are common for tropical forests. Unclear and contested ownership of tropical forests may be rooted in colonialism. In some cases European nations claimed the forests under their regimes, but in practice they mostly remained under local customary ownership and management (Scales, 2016). Forests have many different uses and values depending on the stakeholder and their culture, including a wide range of economic values, cultural and spiritual values, and broader ecosystem services. The attractiveness of valuing forests for their carbon content is that this measure reduces the socioecological complexity to carbon in trees as a relatively simple and universal single metric (Scales, 2016).

Nonetheless, connecting trees to traders to buyers requires a complex commodity chain that involves a diverse range of actors. Calculating forest carbon requires expert environmental consultants. Trading carbon requires financial experts and mechanisms. This has led to the creation of a new political economy of tropical forests with its own distinctive division of labor and elites (Scales, 2016). Payments for ecosystem services thus tend to be associated with high transaction costs due to the range of actors and the diversity of services being exchanged. Carbon levels may be difficult to measure and there is asymmetry of information between buyers and sellers regarding the actual costs of producing a service (Cacho, 2013). These high transaction costs lead to inefficiencies in the implementation of functional offsetting mechanisms.

The commodification of carbon necessary for green economies to operate in tropical-forested nations has implications for forest politics. PES requires clear ownership rights. Forest tenure is often ambiguous in the tropics and a source of tension between governments and local communities. There are also concerns that the potential for forests to start generating carbon income under schemes such as UN-REDD will lead to "green-grabbing," where elites appropriate land and natural resources for both environmental ends and further wealth accumulation (Scales, 2016). Green-grabbing and unclear ownership rights have made it easier for carbon offsets to result in dispossessing rural communities of their lands.

Payments for ecosystem services also have the potential to affect resource-use politics in more subtle ways. For example, farmers in Chiapas, Mexico are altering land-use strategies and planting carbon-sequestering trees as a new form of income. To benefit from forest carbon payments these households are shifting from short-term food production to managing longer-term, forestry-based income. This proves easier for wealthier households, which have more land and capital, and can therefore allocate more land, time, and labor to carbon forestry. Furthermore, this long-term and uncertain investment in carbon forestry requires a shift in resource management from subsistence to long-term, a burden felt by those in charge of managing household budgets and nutritional needs (Scales, 2016). For projects valuing the CO_2 contained in biomass and soils, predicting outcomes and monitoring adherence to contract terms over vast areas of topographically diverse land can be expensive. Transaction costs arise from uncertainty over the permanence of sequestered carbon stocks and uncertainty about humans and the value of agreements they make. The risk of the reversal of sustainable land use practices after payment is received further increases the costs of monitoring and enforcing, and may also lead to additional litigation costs (Cacho, 2013).

Both the drastic and subtle changes to forest politics and management that arise from carbon offset projects should serve as a reminder to nations and NGOs promoting carbon forestry that the rural poor are not a homogeneous mass, and that the costs and benefits of carbon forestry are rarely evenly distributed among households. Poor households can have the most barriers to benefitting from new sources of income. Forest management projects can consider the distinct needs of the poorest individuals and groups, address social and economic barriers to participation, and develop sources of income that operate on short, medium, and long timescales (Scales, 2016). In following these principles, offset programs can prevent rights violations and create poverty alleviation opportunities.

Some forest management projects may overlook the rural communities (Scales, 2016). For example, a REDD project that focuses on the global importance of tropical forests, may not sufficiently acknowledge the local importance of forest resources or violence committed in the name of forest management (Scales, 2016). Different stakeholders can value forests in ways that not only compete, but also conflict with each other. This has made win-win and triple-win scenarios difficult. Although the incentives may align, in practice, actors stand behind conflicting motives and may advocate for policies to help them achieve their goals while undermining those of others. Policy loopholes can allow greedy players to circumvent regulations, undermining any trading system.

Although carbon offsetting and PES share many uncertainties, the theory behind them has led to global efforts to protect tropical forests as some of the world's most important yet imperiled carbon sinks. To do so against the will of powerful actors dominating extractive industries may prove to be a challenge, but so will building enough support from the public. The

following section describes this global drive to reduce deforestation and mitigate climate change, and how a strategy known as REDD+ developed as a result.

Part 2: Carbon Sequestration Policies and Forest Conservation—REDD+ Theory

Protecting natural carbon stores in forests is a means of ensuring that more carbon emissions do not enter the atmosphere and contribute to global warming. The most important natural carbon sinks on the planet are plants, soils, and the ocean, which sequester carbon and thereby store huge amounts of it. Unless these carbon sinks are preserved, stored carbon that has been stored for hundreds if not thousands of years may be released, risking accelerating climate change. Tropical forests are critical carbon sinks for the whole planet, yet they continue to be destroyed at alarming rates. Environmentalists and conservationists alike are therefore resolved to reducing this deforestation rate. In doing so, fewer carbon emissions would be released, more CO_2 would be sequestered, and irreplaceable biodiversity would be saved.

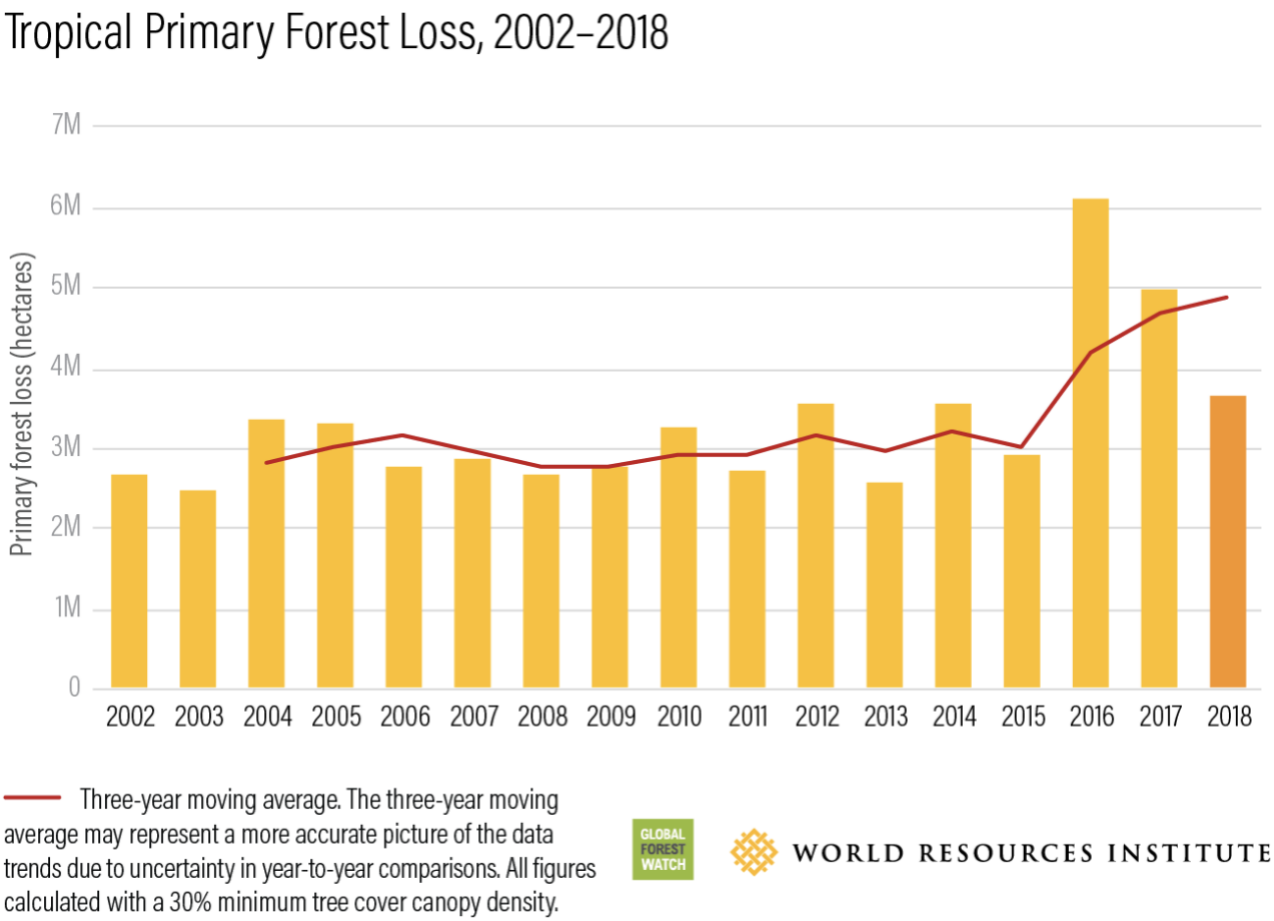
Heat-trapping CO_2 is released into the atmosphere when carbon sinks are destroyed, either by the burning or degradation of organic matter. Deforestation and forest degradation, especially in the tropics, represents the second largest source of anthropogenic carbon emissions, and thus climate change (Enrici, 2016). The conversion of tropical forests to other land uses, such as plantations or pastures, contributes to approximately 10% of net global carbon emissions—more than the entire planet's transport sector (REDD Desk, 2013). As the primary component of man-made emissions contributing to global warming, ending or reducing deforestation rates represents one prerequisite for any effective climate change response (Holloway, 2009).

Forests of all types make up 31% of the land area on our planet, a total of just over 4 billion hectares. They provide essential goods, such as timber and paper. Forests also supply indispensable ecosystem services, as they filter water, control water runoff, protect soil, regulate climate, cycle and store nutrients, and provide habitat to sustain the world's biodiversity (Adams, 2012). Nevertheless, global forest cover continues to decrease each year. According to data from the U.N. Food and Agriculture Organization (FAO), deforestation rates were highest in the 1990s, when each year an average of 16 million hectares of forests were lost (Adams, 2012). Even when some forest areas expanded from natural processes or planting by humans, the net global forest lost an average of 8.3 million hectares per year (Adams, 2012). In the first decade of the century, deforestation rates decreased to 13 million hectares per year, for a global net forest loss of 5.2 million hectares per year (Adams, 2012). Since 2010, however, the world has seen an increase in global deforestation rates. In both 2016 and 2017, almost 30 million total hectares of forest cover was lost, resulting in a 9% decrease in forest cover since 2000 and 98.7 gigatons (Gt) of CO_2 emissions released (Global Forest Watch, 2018). Land clearing for agriculture and pasture is the primary source of forest loss, followed by harvesting wood for fuel or other industrial purposes and then wildfires (Adams, 2012). For example, in 2015, Indonesia suffered damage from a wildfire that burned more than 6 million acres, caused the premature death of 100,000 people, and cost the country at least USD $16.1 billion (Hurowitz, 2018).

Global deforestation rates do not capture the full extent of damage from selective logging, road construction, climate change, and other human actions. Each year fewer forests remain. Those forests that remain may be less effective as carbon sinks. For example, replacing natural old-growth ("primary") forests with plantation monocultures greatly reduces biodiversity while increasing emissions from the felling of old trees (Adams, 2012). Primary tropical

rainforests, particularly those that have never been disturbed by humans, are home to trees hundreds or even thousands of years old. They hold huge amounts of stored carbon and irreplaceable biodiversity. In 2018, the tropics lost a combined total of 12 million hectares of tree cover, the fourth-highest annual loss since the turn of the century. Of this total loss, primary forests made up 3.6 million hectares (see Fig. 1.1) (Weisse, 2019). Once cut down, these forests may never return to their original state.

Figure 1.1: Global Tropical Primary Forest Loss



Source: Weisse, 2019

The few remaining original forest ecosystems on Earth are not the only ones that matter. Secondary forests are those that have been disturbed by human activity in the past, but are

regenerating over time, restoring wildlife and carbon to the land. Secondary forests make up the majority of the world's remaining forests, including more than two-thirds in Asia, and an even greater portion in North and Central America (Hurowitz, 2018). Many companies and governments have made agreements to protect these forests and control deforestation.

Forests are not only a resource for limiting climate change, they also contribute directly to the livelihoods of 90 percent of 1.2 billion people living in abject poverty (The World Bank, 2004). Of these people, 500 million are considered to be forest-dependent, a term used to describe human populations that derive benefits from forests in some way, and 200 million are indigenous (Chao, 2012). Forest-dependent communities are often made up of rural people living in poverty, specifically in substantially forested developing countries (Newton, 2016). Forests support the livelihoods of these people and their local communities by providing them with food, fuel, fodder, livestock, medicine, and shelter (Chao, 2012). As forests also contribute products to international supply chains, they contribute to human welfare and decrease global poverty (The World Bank, 2004). Thus, reducing deforestation provides the opportunity to decrease global warming emissions while at the same time increasing the resilience of those people most vulnerable to its effects.

The ecosystem services that forests provide for the environment and life on earth go beyond carbon storage and emissions offsets. Forests benefit the health and livelihoods of people, control water, food, and nutrient cycling, and improve climate security. Tropical forests help to cool down the Earth's surface through a double-cooling effect, both by reducing carbon emissions and maintaining high levels of evaporation from the canopy (REDD Desk, 2013). These life-sustaining ecosystem services are not confined within national borders; all people are reliant upon them, regardless of location or socioeconomic status. It's in our collective interest to

ensure that these services are sustained into the future. However, essential ecosystem services remain undervalued, and therefore may not compete with the more immediate gains delivered from converting forests into commodities (REDD Desk, 2013).

Given that reducing deforestation is considered to be the single largest opportunity for cost-effective and immediate reductions of carbon emissions, analysts report that combating deforestation and degradation practices in tropical countries ought to be part of any concerted effort to combat climate change (Holloway, 2009). Traditional methods of reducing deforestation have been largely unsuccessful, particularly in the last two decades. The world community has since created a strategy for valuing tropical forests. Known as REDD (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries), it is an international framework to halt deforestation. Through this framework, developing countries are paid for any emissions reductions achieved by decreasing the number of forests converted to alternate uses. After identifying current and/or projected rates of deforestation and degradation, a country taking remedial actions to reduce its loss rates will be rewarded financially relative to the extent of reduced emissions (REDD Desk, 2013).

REDD provides an opportunity for countries to achieve substantial emissions reductions at relatively low abatement costs. By putting a price tag on the role forest ecosystems play in carbon capture and storage, it allows forest conservation to compete economically with historically more lucrative forest exploitation practices (REDD Desk, 2013). Although the idea of REDD became formal at the United Nations Framework Convention on Climate Change (UNFCCC) 13th Conference of Parties (COP-13) in Bali in 2007, its roots date back to the Kyoto Protocol's adoption in 1997. In Article 2, the Protocol refers to the protection and enhancement of sinks and reservoirs of greenhouse gases, sustainable forest management

practices, and afforestation and reforestation activities (Kyoto Protocol, 1998). As of 1997, only afforestation and reforestation activities were eligible to receive credits under the Clean Development Mechanism (Holloway, 2009).

Forest protection has evolved from a RED policy to REDD+ based on improved methods to measure, record, and verify activities. Many of these improved methods arose from the role of land-use, land-use change, and forestry (LULUCF) activities that countries committed to under Kyoto, after years of debate and discussion on how to improve policies (Holloway, 2009). The initial forest policy was RED (Reducing Emissions from Deforestation). It has been modified to REDD+ over the years to include a more comprehensive approach to combating climate change. For example, at COP-13 in 2007, the Bali Action Plan was formulated, which stated that this approach should include not only "policy incentives on issues relating to reducing deforestation and forest degradation in developing countries," but that it should also encompass "the role of conservation, sustainable management of forests, and enhancement of carbon stocks in developing countries" (UNFCCC, 2008). Within a year, these latter three approaches were upgraded so as to receive the same emphasis as avoided emissions from deforestation and forest degradation. At COP-16 in 2010, REDD was changed to REDD+ to reflect the addition of these important new components (REDD Desk, 2013).

Within its scope, REDD+ has the ability to contribute simultaneously to climate change mitigation, rural development and poverty alleviation, and the conservation of biodiversity and vital ecosystem services (Phelps, 2012). Protecting forests for their carbon sequestration abilities has the potential to also contribute substantially to biodiversity conservation. A REDD+ mechanism that seeks to reduce emissions and increase environmental co-benefits may create considerable environmental and economic tradeoffs for development and conservation objectives

(Phelps, 2012). Once REDD+ frameworks are put in place, one continuous challenge is how to measure, monitor, and verify REDD+ activities (REDD Desk, 2013). The further incorporation of co-benefits such as biodiversity conservation and rural development has only made monitoring, reporting, and verification (MRV) systems more complicated (Visseren-Hamakers, 2012).

By 2012, many bilateral and multilateral initiatives sought to prepare developing countries for REDD+. For example, Indonesia has developed national REDD+ strategies through multi-stakeholder processes and pilot programs which were implemented to test different approaches (Visseren-Hamakers, 2012). REDD+ development and implementation follows three sequential phases to prepare each country for REDD+: readiness, demonstration activities, and results-based actions. In phase 1 (readiness), countries formulate detailed REDD+ strategies on how to implement new reforms and regulations. In phase 2 (demonstration activities), these policy reforms are put in place. By phase 3 (results-based actions), the country should participate in results-based actions and receive compensation (Visseren-Hamakers, 2012; Ekawati, 2019). The REDD+ strategy emphasizes a learning-by-doing process, allowing countries to study and monitor progress and failures, develop unique capacities, and use research to evaluate outcomes (Visseren-Hamakers, 2012).

Funding for REDD+ activities will affect how quickly these countries achieve verified emissions reduction results. Reliable and sufficient funding will make a difference both in the short term (to help countries prepare for REDD+ policy implementation), and the long term (to secure sustainable payments for carbon credits). According to some analysts, most REDD+ funding consists of short-term 'fast-start' finance aimed at capacity building and the development of national strategies and action plans (Visseren-Hamakers, 2012). Once in phase 3

of implementation, countries will be ready to receive compensations for REDD+ at the national level. A diverse set of funding mechanisms exist today; public or private; fund-based or market-based; and multilateral or bilateral. The availability of sufficient and durable funding will depend on the political commitment of countries and private actors to invest in REDD+ (Visseren-Hamakers, 2012).

The United Nations created the UN-REDD Program to support the 65 countries across Africa, Asia Pacific, Latin America, and the Caribbean participating in REDD+ readiness and implementation activities (UN FAO, 2020). Launched in 2008 just after the Bali Action Plan was formed, the UN-REDD Program uses the technical expertise and collaborative support of the FAO, the United Nations Development Programme (UNDP), and the United Nations Environment Program (UNEP). Via these forces, UN-REDD supports nationally led REDD+ projects and promotes the involvement of all stakeholders, including indigenous peoples and other forest-dependent communities, in national and international REDD+ implementation (UN-REDD Programme, 2019). UN-REDD provides direct support to the design and implementation of national REDD+ programs. It builds technical capacity through the sharing of expertise, common approaches, analyses, methodologies, tools, data, and best practices across countries (UN-REDD Programme, 2019). UN-REDD also conducts needs assessments to help identify capacity gaps so that technical support, policy advice, training, and other capacity development endeavors can be tailored specifically to each country (UN FAO, 2020). In developing these capacities, UN-REDD assists partner countries to meet REDD+ requirements in order to qualify to receive results-based payments under UNFCCC.

Indonesia is an excellent case study for evaluating how REDD+ and other green economy strategies have fared in reality. Indonesia has the third largest area of tropical forests of all

nations on the planet. It is also the world's largest emitter of CO_2 from deforestation and land-use change (Barr, 2010). In accepting and following the principles of a green economy, Indonesia has the potential to increase economic growth, preserve its imperiled tropical forests and unique biodiversity, and reduce its GHG emissions significantly (Anderson, 2016). This paper explores the complex relation between the REDD+ Strategy, forest commodification, decentralized political forces, local and civil society, forest conservation, and carbon sequestration strategies. It investigates challenges of turning green economy theory into reality, as well as its capacity to achieve simultaneously its three core values of economic growth, social equity, and reduced forest cover loss.

Topic 2: The Case for Indonesia

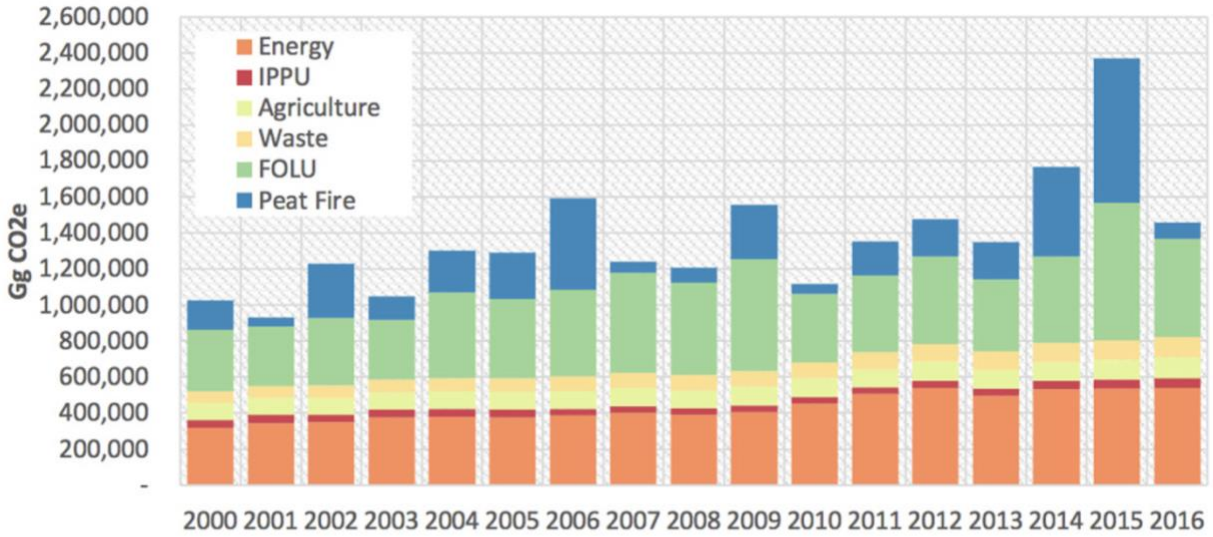
Part 1: Background on Indonesia

Since the early 2000s, Indonesia has been a major GHG emitter. Their emissions are five times more likely to come from deforestation and forest fires than from its energy and industrial sectors (PEACE, 2007). For example, one report states that 85% of Indonesia's greenhouse gas emissions stem from land use activities, 37% of which is attributed to deforestation, and 27% of which comes from peat fires (PEACE, 2007). In 2015 Indonesia struggled to control massive peatland megafires that arose from slash-and-burn agricultural practices. That year, Indonesia produced 9.2 tons of CO_2 per capita, surpassing the global average of 7.0 tons per capita, and falling only behind the United States, which produced 20.4 tons of CO_2 per capita. Indonesia also became the fourth largest emitter of GHG in the world that year, comprising 4.8% of the world's total emissions (see Fig. 2.1) (Dunne, 2019).

Indonesia has the potential to reduce GHG emissions levels by limiting deforestation and protecting peatlands. As the global human population continues to increase, demand for agricultural products intensifies, leading to further transformation of biodiversity-rich rainforests into agricultural landscapes (Singh, 2013). Indonesia, along with many other tropical countries, has faced economic pressure to continue agricultural expansion. This expansion is a leading cause of deforestation, biodiversity loss, and environmental degradation (Singh, 2013). Other drivers of deforestation in Indonesia include mining, logging, aquaculture, and forest fires. Over the past fifteen years, Indonesia has seen a substantial increase in the number of mining businesses operating in forest areas (Kartodihardjo, 2015). As of 2015, 379 different corporations were mining within conservation forest areas, where mining is "not permitted"

according to Indonesian forest governance. This led to the exploitation of over 1.3 million hectares of land which should have been prohibited (Kartodihardjo, 2015). Illegal logging is yet another major source of deforestation in Indonesia. According to estimates from the Environmental Intelligence Agency (EIA), illegal logging costs the country an estimated USD $2 billion a year in lost revenue, taxes, and duties (Permitting Crime, 2015).

Figure 2.1: Indonesia's Total Emissions, 2000-2016



Indonesia's total emissions from 2000-16. Emissions from peatland fires (blue), forestry and other land use ("FOLU"; green), waste (yellow), agriculture (pale green), industry ("IPPU"; red) and energy (orange) are shown. Emissions are shown in gigagrams of CO2 equivalent (GgCO2e, millions of tonnes). It is worth noting that the figures are self-reported. Source: Ministry of Environment and Forestry, Indonesia.

Source: Dunne, 2019

Behind Indonesia's extensive land-use transformation are strong economic drivers. The total export value of forest products, including timber and its products, coal, palm oil, and petroleum, continues to rise. Palm oil is a significant Indonesian export, as it is one of the most rapidly expanding crops in the world due to its variety of uses as both as a food source and as a raw material for consumer goods such as cosmetics, industrial lubricants, and biofuels (Dunne, 2019). Palm oil monocultures as a replacement of natural forest cover has driven widespread deforestation in Indonesia over the past 20 years, affecting the region's biodiversity. The

plantations support less biodiversity than both the primary forests and the disturbed and logged forests that they replace, mainly due to the lack of structurally complex vegetation on plantations (Singh, 2013). Indonesia supports 53% of the world's palm oil cultivation, employing an estimated 3.7 million people. Palm oil is the county's third most profitable export behind coal and petroleum (Dunne, 2019). Palm oil's contribution to deforestation in Indonesia reflects profits from global palm oil, where demand continues to drive its expansion even further into the nation's imperiled forests.

Of all major GHG emitters, Indonesia as a country stands to lose the most from the impacts of climate change. Deforestation practices and peatland megafires continuously emit massive amounts of greenhouse gasses in the area, making Indonesia even more susceptible to temperature increases. Even a modest temperature increase could lead to detrimental impacts. As an archipelago in the tropics, it is at major risk of sea level rise, prolonged droughts, and major floods resulting in devastating landslides (Edwards, 2012).

The increase in ambient temperature in Indonesia may affect the region's hydrological cycle, including its evaporation, transpiration, run-off, soil moisture, and precipitation patterns. One analyst suggests that there will be increased intensity of rainfall over shorter periods due to the prolonged dry season, with a greater likelihood of more intense droughts (Sari, 2007). Greater intensity of rainfall increases risks associated with major flooding and landslide events. A decrease in crop production as a result of these combined effects could reduce food security in the country, affecting agricultural employment and the livelihood of average Indonesians, as 46% of employment is in the agricultural sector, making up 16% of the country's total GDP as of 2007 (Sari, 2007).

Greater rainfall intensity can accelerate soil erosion and soil loss. If soil fertility and productivity decline, particularly in upland regions, upland crop yields, such as soybean and maize, may decrease by 20 to 40 percent. Impacts will be most strongly felt by farmers in upland areas who will suffer from deteriorating soil quality and abrupt changes in water supplies due to soil erosion and new precipitation patterns (Sari, 2007).

Another major concern for the people of Indonesia is the threat of rising sea levels. As an archipelago with over 17,000 islands and 80,000 kilometers of coastline, Indonesia is vulnerable to even slight sea level increases. Different sources have given varying estimates on the annual sea level rise in Indonesia, from 2.5 mm/ year to 7 mm/ year (Jakarta Post, 2019). Some scientists claim to have more accurate estimates due to a new digital elevation model developed by Climate Central called CoastalDEM (Jakarta Post, 2019). Previous estimates may have underestimated future inundation risks from rising sea levels. A CoastalDEM analysis shows that currently 23 million Indonesians live below high tide levels—a number that vastly exceeds the 5 million people that previous models estimated would be affected (Jakarta Post, 2019). The report does not quantify the economic or humanitarian costs that have and will continue to arise in efforts to keep the sea at bay. According to the report, CoastalDEM's elevation data shows that by 2100, "land currently home to 200 million people could fall permanently below the high tide line." The report then states that cutting global emissions will lower the number of people in Indonesia affected by flooding or permanent inundation by 20 million people at the end of the century (Jakarta Post, 2019). United Nations Intergovernmental Panel for Climate Change (IPCC) researchers predicted that if emissions remain unabated, the waterline—rising approximately 4 millimeters a year since 2006—could rise as much as 400 millimeters a year going into the 22nd century (Jakarta Post, 2019).

Erosion from increased Indonesian flooding has been responsible for the loss of an estimated 1,950 hectares of coastline annually, or 29,261 hectares lost to erosion in the past fifteen years, an area roughly the size of Jakarta (Straits Times, 2019). One of the erosion impacts due to local human activities includes clearing essential coastal mangrove forests to make room for milkfish ponds (Straits Times, 2019). Mangroves provide crucial protection against tsunamis, and they help to stabilize sediment and decrease the erosion of coastlines. By removing coastal forests, villages and cities alike are undermining the essential role mangroves play in the protection of coastlines. Disrupting the coastal landscape on a local level may create greater erosion impacts than even sea level rise (Straits Times, 2019). Along the coast of Central Java, where some of the worst abrasion in the country has been observed, three separate villages have sunk into the sea over the past 20 years. Experts identified the construction of ports and industrial projects along the coast as a cause of this catastrophe (Straits Times, 2019). With over 80% of industrial locations situated in coastal areas, Indonesia stands to lose economically if the threats of sea level rise and erosion are not brought under control. As about 60 percent of the country's population resides in coastal areas, Indonesia faces major humanitarian risks (Straits Times, 2019).

Researchers now claim that a significant number of coastal cities in Java, Sumatra, and several other islands are at risk of chronic flooding by 2050 (Straits Times, 2019). Jakarta, the nation's capital and home to 10 million people, faces a threat of sinking, in part due to sea level rise but also because of major urban planning problems. These urban planning strategies, or lack thereof, have contributed to the rapid rate at which Jakarta is sinking. Jakarta may be sinking faster than any other city in the world, with buildings being swallowed by the earth, and some coastal districts sinking as much as 14 feet in recent years (Kimmelman, 2017). About 40% of

Jakarta now lies below sea level, protected by only leaking seawalls. Jakarta's water supply and infrastructure are part of the problem. Only a small number of Jakartans have access to reliable piped drinking water. Therefore, much of the public has resorted to digging illegal wells and draining the aquifers over which the city rests, essentially deflating the land on which they stand (Kimmelman, 2017). Environmental concerns, overcrowding, and the looming threat of major floods that will reach the city center, were issues cited by President Widodo in his decision to move the capital city from Jakarta to East Kalimantan. Projected rising sea levels may also affect East Kalimantan, for the CoastalDEM model shows that the city will also be at risk of major flooding by the year 2050 (Jakarta Post, 2019).

Indonesia's carbon-dense peatlands have the ability to make or break the country's emissions reduction targets. As home to 36% of the world's tropical peatlands, Indonesia is in a unique and dangerous position, for these highly-combustible ecosystems can emit massive amounts of GHG when burned, yet they are also one of nature's most effective ways of taking atmospheric carbon and storing it underground (Jong, 2019, November 25). It's estimated that Indonesia's peatlands hold approximately 28 billion tons of carbon—the equivalent of three years' worth of global emissions (Dunne, 2019). Peat consists of 90% water and 10% decaying organic matter. Peat stores 10 times more CO_2 than other ecosystems within thick layers of this decaying plant material. Peatlands can be up to 60 feet deep, and in Indonesia it's estimated that they store about 28.1 gigatons of CO_2 (Liu, 2018; Jong, 2019, November 25).

Peatlands are often in isolated locations and not policed well, making them attractive to expanding palm oil corporations. To clear land for plantations, peatlands must first be drained of their water, a process that in itself emits on average 55,000 tons of CO_2 per hectare every year as the peat decomposes and the carbon is released into the atmosphere, roughly equivalent to

burning upwards of 6,000 gallons of gasoline (Jong, 2019, November 25). Norway has become the first country to ban palm oil by 2020 due to its high deforestation risk and emissions output. The emissions associated with producing a ton of palm oil grown on drained peatlands are 20 times higher than the emissions produced from burning a ton of gasoline (Jong, 2019, November 25). When drained, peatlands act as tinderboxes from natural causes such as a dry season or from intentional fires spiraling out of control. Once they start burning, peatlands are nearly impossible to put out (Liu, 2018). Rather than combusting above ground like typical fires, peatland fires smolder underground, producing smoke and air pollution much worse than that produced by typical burning biomass. This underground smoldering also makes the fires hard to detect and put out, for they don't burn hot enough to be detected by satellites, and can quickly spread underground (Jong, 2019, November 25).

In 1990, less than 2.5 million hectares of land in Indonesia was used for palm oil plantations. In 2008, the total forest covered by palm oil plantations, and hence the loss of natural forests, exceeded 25 million hectares (Singh, 2013). This number has continued to grow, and quickly. Deforestation and forest degradation in Indonesia have also led to widespread loss of habitat within highly productive ecosystems. This loss means that Indonesia now has two threatened hotspots of global biodiversity, and some of the region's wildlife faces an increased risk of extinction (Singh, 2013). As palm oil demand continues to increase, the financial incentives to continue clearing primary forests for plantations have strengthened (Singh, 2013).

Aware of the major threats instigated by climate change, the Indonesian government has embarked on a mission to curb emissions and control deforestation, as will be discussed in the following section. Indonesia's land and people suffer due to the government's failure to take substantive measures to decrease the country's emissions. Although reform policies have been

developed and implemented, they have yet to reduce the country's emissions, largely due to ambiguity and inconsistencies in the regulations themselves, as well as its weak government's capacity to enforce regulations. Resistance from powerful extractive industries have also hindered efforts to reduce deforestation, as conflicting motivations for forest resources continue to complicate the matter.

Part 2: REDD+ Development in Indonesia

In light of the major long-term risks associated with continued global warming, Indonesia has begun implementing policies to curb further deforestation and manage the country's emissions output. In 2007, Indonesia hosted the 13th session of the Conference of Parties (COP-13), which took place in Bali. There, President Yudhoyono pledged that the Government of Indonesia (GoI) would design and implement carbon emissions reduction projects (Barr, 2007). Shortly after, the GoI established the Indonesian Forest Climate Alliance (IFCA) to begin the development of a REDD+ framework in the country (Ekawati, 2019). By May 2009, Indonesia became the first country to enact formal regulations as part of the administration of its new national REDD+ program. In September of 2009, President Yudhoyono committed to reducing emissions from LULUCF by 26% in 2020 from business-as-usual levels, and by 41% if given international aid (Holloway, 2009). This pledge was extended at the Paris Climate Conference in 2016, along with a new intended nationally determined contribution (INDC) pledge of a 29-41% reduction in emissions by 2030 (Evans, 2015). If it could successfully adhere to REDD+ regulations, Indonesia had an opportunity to control high deforestation and degradation levels and reduce global climate change. However, Indonesia's INDC emissions targets are vague on policy and financing needs, so this apparently straightforward pledge has been met with justified skepticism (Evans, 2015).

According to the UNFCCC, the REDD+ mechanism uses both market and non-market forces to provide economic incentives for developing countries to reduce emissions produced from forest deforestation and degradation. REDD+ also encourages these countries to enhance forest carbon stocks through investments in low-carbon development and sustainable forest management (Ekawati, 2019). For example, Indonesia could see significant revenue streams into the national treasury and rural communities through REDD+, promoting economic stability, poverty reduction, and development. One estimate is that a 5% reduction in Indonesia's deforestation rate could generate annual REDD+ payments of USD $765 million, while a 30% reduction could generate more than $4.5 billion annually (Barr, 2007). Securing funds from REDD+ on a regular basis will be a challenge for Indonesia and other forest-rich countries because the payment system is entirely performance-based; payments will require Indonesia to reduce carbon emissions verifiably below an agreed national baseline. While all stakeholders are encouraged to take action in implementing these frameworks, there is no overarching body monitoring and demanding that any action take place (Ekawati, 2019).

Given the large potential sums of money REDD+ activities support, countries receiving aid must have a robust system for financial management and governance to be successful. Without effective administration of funds, or the diversion of funds from their intended purpose, REDD+ objectives will be compromised, along with its ability to verifiably lower the country's carbon emissions. Mismanagement of funds can then threaten the sustainability of future cash flows, as donor organizations are more likely to divert their funding to countries where REDD+ funds are managed according to a higher standard of financial accountability (Barr, 2007). Indonesia must therefore find ways to overcome internal corruption, a problem for many REDD+ nations. REDD+ administration faces an inherent contradiction, as many of the countries most

desperately in need of funding are also those with the longest history of mismanagement of public financial resources (Barr, 2007). According to a 2008 Transparency International report, of the 19 countries participating in the UN-REDD and the World Bank-sponsored Forest Carbon Partnership Facility (FCPF), 10 are ranked in the bottom third (as the most corrupt) of Transparency International's Corruption Perception Index, based on surveys in 180 countries (Barr, 2007).

There is a correlation between likely REDD+ recipients and weak financial governance and management. This relationship stems from the fact that institutional breakdowns and governance failures in both the forestry and financial sectors often play a role in facilitating and exacerbating the activities that REDD+ aims to reduce (Barr, 2007). If REDD+ only operates in countries with strong financial management and governance structures already in place, then some countries most in need of aid won't be served. On the other hand, it becomes difficult to justify granting potentially hundreds of billions of dollars to the forestry sectors of these tropical countries if they are not able to slow deforestation due to ineffective management and the misuse of funds stemming from systematic corruption (Barr, 2007). Corruption in the forestry sectors of developing countries has been pervasive for decades, stemming from the abuse of power among all levels in this sector. Bribes and extortion are common ways to receive benefits in the form of concessions or licensing, and even modest regulations may not be enforced (Kartodihardjo, 2015). As discussed in the following section, corruption has systematically destabilized reforestation and conservation efforts, even before REDD+ funding was available.

Part 3: Corruption and Lack of Transparent Funding in Indonesia

Lack of transparent funding was a key factor involved in the shortcomings following COP-13. This issue, still present today, began with Indonesia's Reforestation Fund (RF). Established in 1989, the Fund was created to support reforestation and regeneration of degraded lands, and to ensure the country's forests would be sustained long-term. Timber concessionaries finance the fund with a volume-based levy, where they are required to pay on every cubic meter of wood harvested from natural forests. By 2010, the Reforestation Fund had amassed aggregate receipts of approximately USD $5.8 billion, making it the commercial forestry sector's largest source of government revenues (Barr, 2007). Since its inception, the GoI has used the Reforestation Fund to finance major public investments in reforestation and rehabilitation. However, in each case program outcomes have fallen well short of stated objectives. Implementation of successful reforestation strategies have been undermined by financial mismanagement and improper governance, issues that Indonesia continues to face today (Barr, 2007).

At the time of the Reforestation Fund's inception, Indonesia's second president, Suharto, was in power. He maintained a strong authoritarian rule from 1966 until 1998, when the growing pro-democracy movement forced him to resign. Suharto's regime, which he coined the "New Order," was defined by a strong political role for the military and the repression of adversaries (Barr, 2007). In Indonesia, the term New Order now embodies the regime practices of unbridled corruption, collusion, and nepotism. Indonesians use the acronym KKN (*korupsi, kolusi, nepotisme*) today to describe figures who upheld these authoritarian practices. Initially, the Reforestation Fund was controlled by the Ministry of Forestry (MoF), which exercised a high

level of discretion concerning how the funds were managed and to whom they would be allocated (Barr, 2007).

Throughout the decade preceding the end of the Suharto era, the Ministry of Forestry used the Reforestation Fund to allocate more than USD $1 billion in cash grants and discounted loans to commercial plantation owners to promote development of industrial timber and pulpwood plantations (Barr, 2007). Due to inadequate mechanisms for oversight and accountability, a significant amount of Reforestation Fund capital was lost to fraud, diverted to other uses, and/or squandered on poorly managed plantations. For example, the Ministry distributed a significant amount of funds and conversion licenses to those companies with ties to the political elite, allowing a few well-connected figures to dominate sizable portions of the forest rent (Barr, 2007). Many of these actors fraudulently overstated their costs and the areas planted to receive funding above the levels to which they were entitled. Other actors used only small portions of their funding to actually manage the established plantation sites, causing the program to fall well short of its productivity target. The Ministry of Forestry distributed $600 million to politically favored projects which had little if not nothing to do with the Reforestation Fund's agenda of promoting reforestation and forest rehabilitation (Barr, 2007).

In 1997, a major financial crisis gripped Southeast Asian countries, raising fears of a worldwide economic meltdown due to financial contagion. As the value of the rupiah declined significantly (from roughly 2,600 rupiah to 1 US dollar to 14,000 rupiah for each dollar), persons who had borrowed money in US dollars were hit hard. Suharto's family members and associates had taken out huge loans from banks, which in turn borrowed significant sums of money from foreign banks. Amidst widespread rioting, Suharto was forced to resign, for the country had no way to pay back its $90 billion debt (Indonesia-Investments, 2010).

The International Monetary Fund then stepped in with a rescue package valued at USD $43 billion to stabilize the Indonesian currency, but it carried certain stipulations. One of these 50 conditions was that the GoI commission a comprehensive third-party financial audit. The audit, conducted by Ernst & Young (E & Y) in 1999, documented systematic financial mismanagement, fraudulent practices by recipients of Reforestation funds, and routine diversion of funds for uses inconsistent with the Fund's mandate. Ernst and Young documented USD $5.2 billion in losses of public funds during the 5-year period spanning 1993 to 1998 (Barr, 2007).

The GoI accepted the E & Y conclusions that major steps would have to be taken to improve administration of the Reforestation Fund and other New Order sources of state finance, including delegation of Reforestation Fund administrative power to the Ministry of Finance, which consolidated it within the state budget. The GoI endowed the Supreme Audit Board with the power to audit the Reforestation Fund and other public financial assets at any point (Barr, 2007). The government also cracked down on corruption, prosecuting two high-profile cases involving the abuse of Reforestation Funds by some of Suharto's close associates. The GoI created the Corruption Eradication Commission, which prosecuted several dozen cases involving senior officials (Barr, 2007). The GoI also created more equitable means of distributing the Reforestation Fund's revenue, with 40 percent allotted to provincial and district governments, and 60 percent being administered by the national government. This period then came to be known as the *Reformasi* era (Barr, 2007).

The fall of Suharto's authoritarian regime paved the way for a new era of Indonesian politics characterized by a more liberal socio-political environment, a desire for stronger democracy, and enhanced freedom of speech. This era spans into the present day, encompassing current president Widodo, who was democratically elected in 2014. Since the fall of the New

Order, the GoI has been challenged to overcome the deeply rooted political and governance problems that face the Reforestation Fund and other modes of state finance. Though promising reforms have been implemented, as discussed above, major challenges continue to impede rehabilitation and conservation efforts. Weak financial management and inefficient administration of revenues by all levels of government undermine the Fund's ability to meet any of its stipulated goals, even with the new reforms (Barr, 2007).

Without effective oversight measures to ensure reforms are followed accordingly, the GoI continues to lose millions of dollars in funding to fraudulent activities. Audits conducted by Indonesia's Supreme Audit Board in 2009 document widespread Ministry of Forestry irregularities and weak internal controls in the distribution of Reforestation Funds. At both the national and regional level, the audits documented routine under-spending of funds budgeted for reforestation and rehabilitation projects, often by more than 50 percent, and planted areas falling short of designated targets. According to the audit, a single public service organization managing over USD $2.2 billion of the Fund's capital failed to disperse a single dollar of the $500 million allocated for plantation development between 2008 and 2009 (Barr, 2007). These audits improved the transparency and accountability of funds in Indonesia, a goal that President Yudhoyono took to heart. However, given that the audits continue to show mismanagement of these funds, the GoI still has significant work to monitor, report, and verify adherence to program objectives.

Widespread corruption in the post-Suharto era is still present, even after the creation of the Corruption Eradication Commission, though now it's decentralized and therefore more difficult to quantify. As during the Suharto era, poor record-keeping and financial reporting makes determining the amount of money that reached its intended purpose hard to assess. The

GoI's inability to manage forestry funds will be tested further as major funding from REDD+ schemes begin to appear. As such, transparency of funds, public accountability, and better financial management by agencies in all levels of government is of critical concern (Barr, 2007).

In 2009, Indonesia's former president, President Susilo Bambang Yudhoyono, stipulated a greenhouse gas emissions reduction goal of 26% by 2020, and up to a 41% reduction under the condition that developed countries provide finance or other forms of support, dependent on REDD+ (Holloway, 2009). Indonesia enacted a number of laws to facilitate REDD+ around the time of Yudhoyono's pledge, including Ministerial Decree P68/2008, which provided guidance on REDD+ pilot programs, and Ministerial Decree P30/2009, which outlined mechanisms for reducing emissions from deforestation and degradation (REDD Desk, 2013). As a member of the UN-REDD Programme and the Forest Carbon Partnership Facility (FCPF), both of which support national REDD+ planning and implementation strategies, Indonesia received USD $5.6 million in funding in March of 2010. The funding was approved by the UN-REDD Programme policy board for the 2009 Indonesia National Programme, and its release from UN-REDD's Multi-Partner Trust Fund marked the start of the program's inception and implementation phase (REDD Desk, 2013).

Part 4: The Oslo Pact

In May 2010, the GoI signed a Letter of Intent (LoI) with the Norwegian government that Norway would pay Indonesia one billion USD to reduce GHG emissions from deforestation, forest degradation, and peatland conversion (Ekawati, 2019). Known as the Oslo Pact, the agreement states that the money will be transferred as long as deforestation rates, and by extension GHG emissions, decline in Indonesia after 2 years (Clements, 2010). Norway entered

this deal to enable it to reach zero emissions by 2050 through Indonesian offsets (Hermansen, 2019).

In the pact, Norway pledges to use the REDD+ framework to aid Indonesia in its capacity to monitor and protect its diminishing forests. Indonesia agreed to advance various forest-conservation initiatives, including a two-year moratorium on any licensing for new logging or plantation concessions on peatlands and natural forests. The deal also required Indonesia to create a "degraded lands" database, which would direct any new development to carbon-poor areas in an effort to minimize emissions and conflicts with any existing landholders. Indonesia agreed to tackle illegal degradation and clearance of forests, create a transparent mechanism for funding its national REDD+ strategy, and implement a province-wide pilot program that yields verified reductions in carbon emissions (Edwards, 2012). The pact calls for the establishment of an independent MRV agency to track Indonesia's progress towards reducing deforestation. This measure would afford greater transparency, an essential component for stronger governance, considering the fact that deforestation in Indonesia has been largely fueled by conversion permits of contested legality to firms controlled by local industrial-political elites (Clements, 2010).

Although the initiatives outlined in the Oslo Pact have the potential to generate USD $5.6 billion for Indonesia, conservationists have been hesitant to accept them with certainty (Clements, 2010). Based on Indonesia's past track record of abuse of power and ineffective reforms, the promise of adhering to the many new projects outlined in the Oslo Pact has been met with skepticism. Indonesia's inconsistent record in forest conservation is a major cause for concern, especially when so much is at stake, both financially and in terms of conservation. For example, the country failed to meet its 2007 promise to reduce forest fires, as human-induced fires increased by 59% from 2008 to 2009 (Clements, 2010). Moreover, just before the 2007

COP-13 session in Bali, President Yudhoyono announced a ban on the expansion of palm oil plantations onto peatlands. Yet, within two years, this ban was repealed by the Ministry of Agriculture, allowing approximately 2 million hectares of peatlands to be cleared (Clements, 2010). Why would authorities reverse the President's decree after it was promulgated, especially when peat soils are traditionally regarded as being suboptimal for palm oil plantations to thrive?

The timing of the repeal offers some clues to this question. It was 2009, and REDD+ was gaining momentum globally as a means of funding conservation. The next Conference of Parties would be held in December, where UNFCCC was expected to recognize avoided deforestation as a legitimate emissions reduction activity. A key criterion for valuing carbon stocks in a REDD+ project is "additionality," the net emissions savings calculated based on a baseline deforestation and emissions scenario. This baseline scenario is what the emission levels would be if a business-as-usual approach was taken, as compared to the scenario in which REDD+ initiatives were followed (Clements, 2010). Therefore, any country working to maximize funding from REDD+ would be interested in registering a high "current" deforestation rate, preferably before the upcoming Conference of Parties, which is exactly what Indonesia did. Had those 2 million hectares not been cleared for development, Indonesia would essentially have defaulted on USD $3.2 - $13.2 billion worth of carbon derivatives from establishing REDD+ projects on those lands, based on a net present value of USD $1600-6600 per hectare (Koh, 2009). The repeal sets a precedent for other carbon-rich nations to exaggerate planned deforestation targets as a ploy to increase future financial benefits from REDD+ activities (Clements, 2010).

Oslo Pact policies do not prevent land or forest degradation but increase it. Under the Pact, land slated for palm oil, rubber, and timber plantations will continue to be converted. In 2009, the agriculture minister himself suggested that the 9.7 million hectares of land allocated to

palm oil plantations could double, and that at least 10 million hectares had already been allotted for industrial logging practices (Clements, 2010). Nevertheless, the Oslo Pact did create some impetus toward rainforest conservation. As the first of its kind, this international effort to save Indonesia's imperiled forests is new, positive, and may inspire similar responses around the world. In an effort to afford greater transparency of where deforestation occurs and by whom, the Pact stipulates the establishment of an independent agency to track the country's progress towards reducing deforestation (Clements, 2010). Indonesia agreed to create a degraded lands database to avoid past instances of even lightly logged forests being classified as degraded as a pretext to clear them. In creating this database, the Pact encourages the GoI to swap concessions for clearing old-growth forests to concessions for clearing degraded lands, which, if verifiably degraded, will lessen the emissions output generated from the clearing of forests (Clements, 2010). However, if logged forests are included in this database, it would represent a severe blow for carbon conservation, for it would continue to allow lightly logged forests to be converted, instead of protected and conserved (Edwards, 2012).

The Oslo Pact seeks to involve all stakeholders in REDD+ decision making and implementation, including indigenous people and local communities (Clements, 2010). Only if local populations commit to protect their own lands from illegal logging and other means of deforestation are such efforts likely to succeed. However, Indonesia has yet to explore how local communities will share REDD+ funds, a key topic that the Pact aims to address through several provincial-level REDD+ pilot schemes.

After a year of delays, the Oslo Pact finally came into effect on May 20, 2011. Since then, Presidential Instruction (InPres) No. 10/2011, which outlines the two-year suspension on new licenses for clearing or logging peat and natural old-growth forest, has been extended four

times (Ekawati, 2019). A readiness grant for USD $3.6 million was signed in June 2011 to support the readiness process, determine reference emission levels, develop MRV infrastructure, and support capacity building between 2011 and 2013, A few months later, as part of Presidential decree no. 25/2011, President Yudhoyono appointed a new REDD+ Task Force, responsible for establishing REDD+ financing mechanisms, the preparation of MRV institutions, and the effective implementation of the moratorium (REDD Desk, 2013).

In September of 2012, after a year of extensive stakeholder consultation, the REDD+ Task Force launched its National REDD+ Strategy. The Strategy is focused on the foundations of REDD+ and its five pillars of:

- Capacity: creating the capacity of all essential institutions;
- Law: developing the necessary legal, enforcement, and regulatory frameworks;
- Strategic projects: beginning with the 'One Map' project;
- Multi-stakeholder participation; and
- Paradigm shift: changing the assumptions, objectives, reference points, and techniques applied to the LULUCF sector in order to achieve low-emission and socially inclusive land use governance (Caldecott, 2013).

As a non-binding document, the Strategy guides REDD+ in Indonesia. The National Strategy has since faced many implementation challenges. In response, Indonesia began to emphasize development of sub-national REDD+ strategies (STRADA) in 11 different provinces (Caldecott, 2013).

These sub-national STRADAs and action plans are developed by local REDD+ teams, composed of academics, officials, NGOs, and others appointed by the local government. Each province has a REDD+ coordinator from the central team in Jakarta to facilitate and inform the

process of implementing these local action plans (Caldecott, 2013). The Task Force's first official pilot program was launched in Central Kalimantan. In its first evaluation report, the pilot program was described as containing "an abundance of issues typical to the country as a whole." Some of these issues were mentioned in the report, including boundary disputes between sub-districts, competition over land tenure, overlapping tenure systems and concession licenses, mining in Forest Estate areas, and other topics (Caldecott, 2013). Nevertheless, a STRADA was prepared for Central Kalimantan despite many conflicts of interest, and the province's action plan was finished in 2013. The STRADA's short-term objectives (2012-2014) were to implement the REDD+ Agency, reduce the rate of forest conversion, strengthen the recognition and mapping of land, and start the MRV system. In the medium term (2014-2020), the STRADA's objectives were to promote environmentally friendly investments and to improve the status of land ownership and quality of governance. In the long term (2020-2030), the STRADA's goals are to promote community-based forest management and peatland sustainability (Caldecott, 2013). These objectives align with those of the other 10 pilot provinces, as well as those of the entire nation.

Part 5: Indonesia's Moratorium on New Concession Licenses

The initial priority of these sub-national REDD+ strategies is facilitating the achievement of short-term objectives through the design and implementation of a moratorium, intended to temporarily halt the issuance of new plantation permits in natural forests and peatlands. The content of this decree was arguably the most important indicator of whether business-as-usual practices were to be challenged in a meaningful way. The Presidential Task Force on REDD+ produced a detailed draft that covered a wide range of land protected under the moratorium. The Ministry of Forestry quietly drafted a second version of the decree and sent it to the President

directly for consideration. The content of this second draft sought to render the moratorium ineffective by reducing covered areas (Fay, 2018). After much debate between Task Force members and the MoF, the decree signed by the President was a compromise between these two drafts.

In conflict with the agreements of the LoI, the moratorium does not include all natural forests, only those classified as old-growth, or primary. This allowed for tens of millions of hectares of secondary forests, a majority of them falling within indigenous territories, to be left open for new concessions (Fay, 2018). As both feared and expected, Indonesia permitted a rush of new concession licenses, spanning millions of hectares, to be approved on December 31, 2010, one day before the LoI was originally scheduled to take effect (Clements, 2016). Exactly how much land was approved for new licensing is unknown, but estimates from the Center for International Forestry Research (CIFOR) state that 9.6 million hectares of old-growth forests and 5.8 million hectares of peatlands were licensed, for a total of 15.4 million hectares lost to development (Murdiyarso, 2011). In these ways, powerful industrial lobbyists prevented the moratorium's potential to protect forests and in effect kept Indonesia's business-as-usual practices.

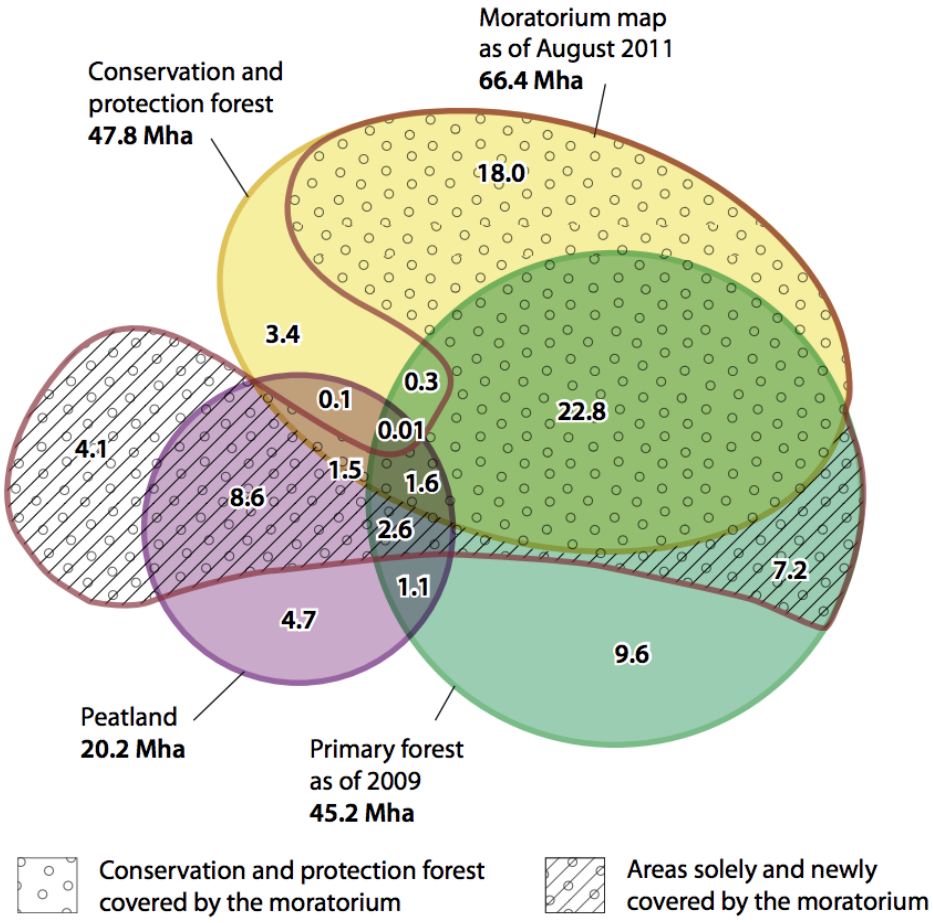
The Task Force was still committed to upholding the moratorium and thus reducing Indonesia's deforestation rate despite the vast amount of land excluded. As the moratorium is a non-legislative document, there are no legal consequences to ministries or government agencies if the Presidential Instruction isn't implemented or verified (Murdiyarso, 2011). The Presidential Instruction protects old growth forests and peatlands from conversion, but allows new licenses on so-called "degraded" lands, which encompass a vast amount of selectively logged dry forests, as they are not considered critical enough even though these dry forests and degraded lands

continue to sustain native biodiversity and substantial carbon stores (Edwards, 2012). Dry forests and degraded lands may have a lower capacity to sequestrate carbon versus peatlands and ancient forests, but when put into perspective in terms of scale, they account for vast amounts of carbon storage.

Because of the lack of protective measures that the moratorium placed on dry and selectively logged forests, the area of land actually protected is significantly smaller than its potential coverage. The area of degraded forest that can be designated for new concessions dwarfs the lands protected under the Presidential Instruction—it is 15 times the size of Belgium and 46.7 million ha (Edwards, 2012). Of 66.4 million ha of forest cover included in the moratorium map, only about 26%, or 11.3 million ha, are actually protected when taking into account the moratorium's exceptions and those forest concessions already previously protected (Enrici, 2016). Existing conservation areas encompass 47.8 million hectares of forest. After subtracting the newly licensed areas, the moratorium protects just 22.5 million ha of forest and 7.2 million ha defined as old-growth forest. The total area of forest protected under the moratorium is therefore less than half of the area of logged forest that remains wholly unprotected (Edwards, 2012). Ultimately, at least 29% of the nation's peatlands and 21% of its remaining primary forests were excluded from the map and thus open for conversion. When considering the fact that 63.8% of the area covered was already designated as conservation or protection forest areas, and another 19% is geographically or legally protected, the moratorium only newly protects 17.2% of the land it covers (Enrici, 2016). By structuring the moratorium's

design in such a way to include areas already protected, the ban appears to afford far greater forest protection measures than it actually does (see Fig. 2.2).

Figure 2.2: Venn Diagram of the Moratorium Map Superimposed on Forest Types



Source: Murdiyarso, 2011

In contrast to the forested areas protected or not based on their classification as 'primary,' 'natural,' 'old-growth,' or 'degraded,' the text on peatlands implies that the moratorium protects all peatlands deeper than 50 cm, regardless of their type, location, jurisdiction, or level of disturbance (Edwards, 2012). Indonesia's peatlands cover a combined 20.2 Mha, distributed mostly across the islands of Sumatra, Kalimantan, and Papua, estimated to store more than 30

billion tons of carbon (Murdiyarso, 2011). The Presidential Instruction protects 11.2 million hectares of deep peatlands, 2.6 Mha of which are primary peatlands, and 8.6 Mha of which are logged peatlands (Edwards, 2012). This excludes the country's remaining 5.8 Mha, presumably because of existing permits or because the land is expected to be used for future activities related to energy and food security (see Fig. 2.2) (Murdiyarso, 2011). Much of this land is both physically accessible and at great threat of conversion, therefore its protection represents a significant victory in terms of both carbon and biodiversity conservation (Edwards, 2012). However, of the 11.2 Mha protected under the moratorium, only 4.2 Mha of the peat remains under primary forest cover. This is important because non-forested peatlands, which comprise a total of 9.5 Mha (both under the moratorium and not), are at the greatest risk of further degradation from forest fires and the alteration of water regimes. Indonesia would benefit substantially, in terms of carbon stores, by enforcing the protection of all peatlands, regardless of existing licenses or potential future uses. Forests growing on peatlands and non-forested peatlands have the highest destruction rates and their conversion into plantations could cause CO_2 emissions to be as high as 60 tons/ha/year. Even after conversion, peatlands continue to emit greenhouse gases (Murdiyarso, 2011).

Stakeholders who earn their livelihoods from forest conversion have challenged the moratorium, arguing that it could disrupt palm oil and other crops' expansion programs, thereby threatening the job security of many local residents. To assess the validity of this claim, Indonesia assures that all variables be considered, including the rise of new job opportunities as REDD+ becomes implemented. For example, large palm oil companies, which had been expanding at an average rate of 10,000 ha per company per year, are expected to have sufficient land permits granted or approved-in-principle to continue expanding at those rates even beyond

the length of the 2-year moratorium (Murdiyarso, 2011). In this case, the moratorium would have little impact on employment associated with expansion.

The massive amount of land that has thus far been accessible to palm oil producers has reduced production efficiency, as developers choose to continue expanding as opposed to intensifying production from existing estates. These practices have meant that Indonesia's productivity per unit area of palm oil plantation has fallen well short of its potential. Average palm oil productivity for the nation is 3.5 tons per ha, 40% less than Malaysia's average of 6.4 tons per ha (Murdiyarso, 2011). This discrepancy provides room for improvement. In working to improve yield production, developers could also explore means of enhancing infrastructure. This in itself would provide jobs and generate income for local communities. Another potential new option for companies that have already acquired degraded peat forests is to apply for new licenses for ecosystem restoration. While aboveground carbon stores on these degraded lands may be low, there is a high likelihood that the ground below still holds significant carbon stocks. Depending on the economic viability of this strategy, the restoration of degraded lands has the potential to attract investments from the private sector (Murdiyarso, 2011).

Indonesia never considered the two-year moratorium on new concession licenses as an end in itself, but rather a means of achieving better forest governance for the long term. The moratorium can essentially be viewed as a trial phase for Indonesia, where necessary coordination processes, data collection, and new regulations could be tested and improved upon. As the moratorium was so limited in its scope and lifespan, one of its most important benefits is that it forced relevant ministries and agencies to communicate regularly and transparently both amongst themselves and with the public. A significant step towards achieving greater transparency came with the Ministry of Forestry's release of 2009 land cover data, followed by

its release of the Indicative Moratorium Map (IMM) for public review in 2011. The InPres calls for the revision of the IMM every six months in order to review the progress and impediments of the moratorium policies and their implementation (Murdiyarso, 2011). This regular revision allows Indonesia to improve forest governance, as it allows for the possibility of reviewing existing concession licenses and better spatial planning strategies, which could eventually change the size and the permanence of the area secured under the moratorium. By reviewing approved-in-principle licenses and the renewal of existing licenses for their environmental integrity (ie. carbon and biodiversity richness), the Ministry of Forestry has the ability to expand the moratorium to cover more critical lands in the country, and to revoke licenses for non-compliant or poorly performing operations (Murdiyarso, 2011).

Given the size, scope, diversity, and geographic scale of Indonesian land, a continuing challenge is coordination among central and regional governments in interpreting decentralization laws and engaging multiple government agencies and stakeholders at once. For example, coordination for future REDD+ implementation under the moratorium serves to establish the enabling conditions necessary to improve low carbon development strategies under REDD+. The moratorium could pave the way for successful policy reform far beyond its 2-year lifetime if stakeholders accept opportunities to improve the moratorium's effectiveness, such as use of spatially explicit land cover information from the Ministry of Forestry. The Ministry did release the IMM for public review. Other steps could include the release of complete and accurate license information, forest designation maps, and land use maps (Murdiyarso, 2011).

Though imperfect, the 2009 moratorium on new logging concessions did promote Indonesian forest conservation. In 2013, the second evaluation of the Indonesia-Norway REDD+ Partnership deliverables found that there had been substantial progress in establishing

arrangements needed for beneficial reforms to governance of the LULUCF sector in Indonesia. The evaluation of Phase 1 REDD+ deliverables reported that all deliverables had either been accomplished or were in the process of being accomplished. For example, InPres 10/2011 was replaced and extended to May 2015 by Presidential Instruction 6/2013. The IMM published a fourth revision of its public map of all forests and concessions. Presidential Regulation 62/2013 established a legal basis for a national REDD+ Agency to facilitate REDD+ processes; coordinate REDD+ actors; develop advanced MRV systems and REDD+ financing systems; implement the moratorium; and close moratorium loopholes (Caldecott, 2013).

Part 6: Indonesia's National REDD+ Agency

President Yudhoyono's creation of a national REDD+ Agency in 2013 was significant, as it became the first cabinet-level government institution in the world with a role to prevent land-based CO_2 emissions (Fay, 2018). As agreed in the original LoI between Norway and Indonesia, this REDD+ Agency had five main features: its leader should report directly to the president; it should be cross-sectional; it should have ministerial-level leadership; it should be the Designated National Authority (in UNFCCC terms); and it should have the authority and power to influence events, rather than just coordinate stakeholders (Caldecott, 2013). In effect, the Agency's mandate is to help the president coordinate, supervise, facilitate, manage, and control REDD+ in Indonesia. Over the next two years, the Agency strengthened, expanding relationships previously established by the Presidential Task Force. The Agency served as a network for land and forest management reform, attracting partnerships with institutions both locally and abroad (Fay, 2018).

The REDD+ Agency developed strategies to address Indonesia's land-based emissions under its "Beyond Carbon" program that defined the Agency's REDD+ National Strategy. The

program sought to: aid in sustainable landscape management; enable sustainable economic systems for land utilization; empower local economies; and mainstream development reforms (Fay, 2018). The Beyond Carbon program developed an inventory of licenses for conversion and legal challenges to the original distribution of those licenses. It addressed extensive tenure conflicts between local communities and extractive industries that arise from distributing conversion licenses in lands considered indigenous territories (Fay, 2018). To resolve the complex problem of overlapping land use licenses issued by various ministries and local governments, the Agency promoted a "One Map Policy" (OMP) and a single integrated database to manage all information related to natural forests, forest lands, indigenous communities, mining, palm oil plantations, and other land-use licenses (Fay, 2018). The accumulation and synchronization of all this information was not completed in President Yudhoyono's administration. Subsequently the Widodo administration sought to accelerate the OMP's delivery.

The REDD+ Agency's Beyond Carbon strategy faced many implementation challenges, such as integrating programs into district level planning. Competition among government agencies and resistance from plantation conglomerates slowed the forest governance process, resulting in delays that would place the government's effort to meet its GHG reductions commitment far behind schedule (Fay, 2018). These ongoing challenges and strong push-back from elites demonstrate that even with an Agency that can propose new legislation, Indonesia's forest governance could remain stagnant until these fundamental obstacles are overcome.

When Joko Widodo was elected as president in 2014, his election signaled a shift away from elite control of the political system and towards a leadership committed to addressing inequities, weak government services, and corruption (Fay, 2018). Although his administration

was perceived as pro-business, he committed to sustainable forest management and improving the welfare and productive capacity of local people, thus emulating what was called a "green economy." One of Widodo's first actions as president was to combine the Environment and Forestry ministries to become the Ministry of Environment and Forestry (MoEF). He incorporated all land-use and climate related agencies, including the REDD+ Agency into one ministerial body, the National Climate Change Council (DNPI), creating one broad Climate Change Directorate in 2015 (Fay, 2018) The merger was presented as a way to improve forest management with environmental protection and deal with corruption while improving efficiency. His new arrangement was technically in breach of the LoI and was therefore opposed by the Agency's leadership and other activists, including key donors. Moreover, environmental NGOs expressed concerns that in merging the environmental and forestry ministries, environmental concerns would become marginalized and lose momentum (Anderson, 2016). Since the merger, progress in the REDD+ agenda has become more difficult, as the REDD+ Agency and its programs are now managed from a lower administrative level within the MoEF, as opposed to its own independent agency (Fay, 2018).

Part 7: Phases of REDD+ Implementation in Indonesia

The moratorium in place represents a key deliverable of Phase 1 and step towards the start of Phase 2, where transformation of managerial systems in the LULUCF sector are slated to take place. With only limited oversight from the REDD+ Agency that was intended to facilitate all REDD+ action plans, analysts report that the moratorium has been ineffective at reducing deforestation (Caldecott, 2013). A UNDP participatory assessment of forest and REDD+ governance, conducted from 2011 to 2013, gave ten provinces a composite score of only 2.35 out of 5, based on separate assessments for transparency, participation, equity, capacity,

accountability, and effectiveness (Caldecott, 2013). NGOs in provinces such as Central Kalimantan reported that licenses for new concessions were still being issued in the moratorium area, a fact confirmed by the Governor of Central Kalimantan in 2013. The Governor also confirmed that licenses for degraded/deforested lands were not being revoked, apparently to allow companies to maintain their presence on the ground and thereby continue buying logs illegally from local people (Caldecott, 2013).

Once all six Phase 1 deliverables were established (a National REDD+ Strategy; selection of a pilot province; the moratorium; a REDD+ Agency; an MRV institution; and a financing mechanism), Indonesia was ready to enter Phase 2 of REDD+. Phase 2 involves implementation of national policies, measures, strategies, or action plans for further capacity building, technology development and transfer, and results-based demonstration activities, which would then evolve into results-based actions (Phase 3) (REDD Desk, 2013). Indonesia has not publicized when exactly it entered into Phase 2 of REDD+, as given the decentralized nature of regional projects, they operate along different timelines. Indonesia also continues to modify Phase 1 outcomes, such as the MRV institution, clouding the exact transition between Phase 1 and 2.

Phase 3, however, is marked by a decisive turning point: it begins when the changes to national legislation implemented in Phases 1 and 2 reduce deforestation, stimulating the pay-out of funds based on reduced emissions. For Indonesia, this transition into the final REDD+ phase was delayed by a long list of issues, from not enforcing new regulations, to permitting illegal logging, the expansion of palm oil farms, and even catastrophic forest fires. In 2017, Indonesia was finally able to reduce its rate of deforestation. After verification from the Norwegian

Government in 2019, Indonesia is finally set to receive the first part of the billion-dollar Norwegian pledge.

While some analysts praise the GoI's entry into REDD+ Phase 3, other analysts remain only 'cautiously optimistic.' Indonesia did reduce its carbon emissions in 2017, but only by 4.8 million tons (Jong, 2019, February 20). This reduction is the equivalent of preventing the deforestation of 38 square miles of forest, assuming that one hectare of forest holds an average of 132 tons of CO_2. This small forest area saved can be viewed as the culmination of tremendous effort over more than a decade.

Debate over the valuation for each ton of CO_2 reduced has extended Indonesia's pay-out date. Indonesia advocated for a higher valuation than what Brazil earned under its own deal with Norway, stating that people's livelihoods need to be compensated now that they can't use the forest for survival. If Indonesia were to receive payments equivalent to those of Brazil (at $5 for each ton of CO_2), Indonesia would receive approximately $24 million from Norway for its 2017 efforts, an amount deemed too low to accept at this point (Jong, 2019, February 20).

Why was the area of tropical forest saved from conversion in 2017 so small, and why did it take so long to accomplish? According to one analyst, the answer lies with uncertainty, ineffective policies, inadequate enforcement of regulations, and Indonesia's lack of coordination across all levels of government (Ekawati, 2019). These critical issues have undermined Indonesia's ability to meet its conservation targets since Yudhoyono's 2007 pledge to decrease emissions. The following section will focus on barriers Indonesia faces for achieving its REDD+ objectives, and how these challenges have manifested themselves in the country's policies, regulatory power, and attitude towards the government.

Topic 3: Limitations for REDD+ in Indonesia

Table 3.1 lists a set of barriers to REDD+ implementation. These factors are discussed in the section below.

Table 3.1: Barriers to REDD+					
Weak Forest Governance	Weak Institutional Capacity	Corruption	Overlapping Authority	Insufficient Sanctions	Lack of Transparency
The Moratorium	Confusing Forest Classifications	Ambiguous Terminology	Loopholes & Exceptions		
Lack of Local Participation	Few Rights for Local & Indigenous Communities	Lack of Rights Recognition Linked to Deforestation	Contested & Overlapping Land Tenure		
Social Forestry Program	Complicated Permit Process	Difficulty Implementing the Program	Lack of Effective Support Systems		
Conservation Vs. Economic Development	Exploitative Corps Undermine Conservation Efforts	Conflicting Policies and Goals	Inefficiency in Forest Governance as a Result		

Part 1: Weak Forest Governance

Weak forest governance is ubiquitous in Indonesia, reflecting a history of problematic governance since the Suharto regime and its subsequent decentralization. Confusing regulations, weak institutional capacity, corruption, overlapping authority, and insufficient sanctions for violations all result from this weak governance (Enrici, 2016). These challenges have meant that Indonesian deforestation occurs both in designated production forests and areas recognized and

protected by the MoF. Between 2000 and 2012, 40% of primary forest loss occurred in areas that prohibited clearing. According to estimates from the MoF, during those same years 13% of the total deforestation took place in conservation and protection forests (Enrici, 2016).

Lack of coordination among different levels of government (i.e. district, regional, and national) creates ambiguity regarding which regulations to follow, as national and regional goals for forest management and land use may conflict with each other. Confusing regulations due to this ambiguity can exacerbate weak governance, leading to discrepancies between nationally stipulated forest management goals and what occurs in reality. For example, the national government may designate an area of forest as protected. Regional governments still have the authority to issue licenses for operating within those areas, which then leads to clearing and degradation in protected areas (Enrici, 2016). Furthermore, protected areas may be designated at the national level, but enforcing the protection of these areas falls to local authorities. These authorities could receive bribes from companies or individuals wanting to operate within a specific protected area, leading to forest damage. Preventing encroachment into forested areas is problematic even when an area is designated as a conservation area, REDD+ activity site, or national park (Enrici, 2016).

Conservation areas and REDD+ sites are vulnerable to encroachment from palm oil, mining, and logging, to which authorities often turn a ‘blind eye’ due to lack of incentives and capacity to deter. Encroachment occurs when agricultural lands border protected areas or REDD+ projects, and in some instances local authorities take no action to stop it. Encroachment may start out small, but if authorities do not have the capacity to force out exploitative activities, it can spread to cover thousands of hectares, as has been the case in a number of National Parks

and REDD+ projects (Enrici, 2016). Indonesia's inability to control encroachment, even in its protected areas, poses a huge barrier to its ability to meet environmental protection goals.

Indonesia's inability to deter encroachment is aligned with its failure to control widespread corruption. During the Suharto regime the GoI created a Reforestation Fund (RF) to aid in reforestation and forest rehabilitation, yet instead it was used as a front to transfer funds to powerful political actors and firms. Today, that same RF is one of the government's key tools for achieving its pledge to reduce emissions by 29% by 2030. When President Widodo took office in 2014, his administration agreed that an area the size of the UK was critical for reforestation. The area of land actually reforested since then has been negligible, amounting to fewer than 390 square miles between 2015 and 2018, less than half of one percent of the initial target (Jong, 2019, January 25). As of 2019, President Widodo has tripled the land rehabilitation program's funding. The Ministry of Environment has set a goal of restoring 800 square miles of critical land annually. To meet the country's emissions reduction target by 2030, the pace of reforestation must be far greater, at least 3,000 square miles a year (Jong, 2019, January 25).

President Widodo increased the program's funding because lack of funding was cited as the main impediment to reforestation (Jong, 2019, January 25). However, the RF, amounting to $340 million as of the end of 2018, has gone untapped for years. Government officials are reluctant to use cash from the RF due to its history of mismanagement under the Suharto administration, wherein many officials were implicated in cases of malfeasance. Fear of being accused of corruption has led officials to steer clear of the fund, leading to vast areas of critical land going unrestored (Jong, 2019, January 25). Indonesia's struggle with corruption runs deep, and this is just one example of how difficult it has been to overcome, both in government action and in civilian perception of the government and political elites. Nonetheless, if Indonesia wants

to achieve its emissions reduction goal, the chronic obstacle of corruption must be faced head on.

Illegal logging has been another pervasive barrier to forest conservation initiatives in Indonesia. Back in 2010, when the LoI was signed, Norway gave estimates claiming that illegal logging contributed to an annual loss of USD $2 billion in revenues, taxes, and duties (Permitting Crime, 2015). The Human Rights Watch gave a different estimate in 2013, claiming that between 2007 and 2011, USD $7 billion was lost to corruption within the forestry sector and illegal logging activities (Enrici, 2016). To deter this problem, the REDD+ program was expected to establish a special unit to tackle illegal logging, and to enforce existing laws against it, along with laws against trading timber and related forest crimes. After two years of investigations into the palm oil sector in Indonesia, the Environmental Investigation Agency (EIA) published a report in 2015 documenting systematic criminality driving forest conversion, which reports that "the unprecedented growth of plantations has been characterized by illegality" and that "successive attempts to bring some semblance of order…. have been undermined by a combination of corruption and incompetence, resulting in the exploitation of forest dwellers and driving rates of deforestation to the highest in the world" (Permitting Crime, 2014).

The report describes a surge in timber production in the Central Kalimantan province, supposedly from logging concessions (which had not been increased), but actually from new permits for palm oil expansion. This timing suggests that the increase in timber was more likely from unlicensed and mis-declared timber from plantation expansion than from logging concessions. This timing coincided with the first direct elections of local regents, providing a clear link between the surge of palm oil concessions, a corrupt regent, and a high-profile political graft case (Permitting Crime, 2014). REDD+ has failed to address this illegality and corruption

through its reforms, which has allowed the ongoing destruction of Central Kalimantan's forests. The EIA's report concludes that even with the raft of policy developments created under REDD+, Indonesia's forests remain "wide open for conversion," and that the spatial plans used to govern forest and land use in effect provide a legal basis for companies to continue destroying forests for years to come (Permitting Crime, 2014).

Because corruption in Indonesia reaches into the top levels of central and regional government, as well as across ministries, its eradication is difficult. Although reforms have been put in place to increase transparency and accountability, the GoI's attempts to halt corruption through the Corruption Eradication Commission (KPK) has been described by different actors as both successful and weak (Enrici, 2016). In a 2013 report conducted by the KPK, it found that the MoF was responsible for inaccurately mapping forest cover, land use, concessions, and unfairly allocating land rights. While the KPK has had a number of successes related to forest governance reforms, those who describe it as weak claim that the KPK has faltered in its power to prosecute high ranking individuals (Enrici, 2016). One example from 2019 of the persistent lack of transparency in Indonesia's forest management is the MoF's decision to withhold data on right-to-cultivate permits for agriculture, known as HGU permits. Each permit contains details such as land boundaries, coordinates and the area of the concession, as well as the leaseholder's name. HGU permits deter land-grabbing, an issue commonly seen when companies lay claim to community lands without having to show their concession maps (Jong, 2019, February 20). By withholding data, the MoF creates ambiguity about forest boundaries and ownership, a critical issue surrounding Indonesia's weak forest governance.

Lack of sanctions for those who violate regulations is yet another factor contributing to Indonesia's inability to deter corruption. Legal sanctions for these violators are nonexistent or

too weak to support enforcement (Enrici, 2016). Even in some cases when there are indisputable infringements of licensing regulations, authorities have initially retracted the holders' licenses, only to reissue them at a later date (Indrarto, 2012). Sanctions are not only scarce, but they are also difficult to enforce, due to lack of clarity about who has the power to invoke them. This ambiguity can be seen in the fact that the MoF is responsible for all official forest land but has no capacity to enforce sanctions on any permits issued by another sector (Enrici, 2016). Due to the various limitations outlined above, Indonesia's MoF does not have the institutional capacity to fully manage and protect its forests.

Part 2: Moratorium Loopholes and Ambiguity

In addition to Indonesia's many REDD+ implementation barriers, the moratorium itself faces certain constraints. The wording and content of the 2011 moratorium can be confusing and regulations can be circumvented. In the first three months after the moratorium was issued, over 100 cases of deforestation were recorded in non-concessioned moratorium areas. As recently as 2011, there were no sanctions developed in accordance with the moratorium (Enrici, 2016).

The ambiguity of the moratorium arises from Indonesia's history of forest classification. The legal designation of land as "official forest" does not necessarily depend on whether or not that land has forest cover, leading to a dichotomy of forested areas that can be classified as either "institutionally recognized" (IR), "non-institutionally recognized" (NIR) or non-forested areas that are institutionally recognized as official forests (see Table 3.2) (Enrici, 2016). To be IR, the lands must be designated by the GoI as being under the authority of the MoF. Indonesia classifies official forests based on their intended function, with the three main categories of protection forest, conservation forest, and production forest. Production forests are then separated based on their categorization as regular production forest, convertible production

forest, and limited production forest (Enrici, 2016). Land that falls outside the jurisdiction of the MoF is considered land for other uses (APL), and is not officially recognized as forest, even if it has actual forest cover (Enrici, 2016). This complex classification system is part of a larger trend of confusing forest management regulations in Indonesia, serving to exacerbate already weak institutional capacity and opportunities for corruption that result in the mismanagement of resources.

Table 3.2: Indonesia's Forest Classification System

Forest type	Indonesian title and code	Indonesian forest code	Purpose/function	Possible management practices	Area extent (Million ha)	Percentage of forest loss by forest type for 2011/2012 (%)
Official forest	Kawasan Hutan		Area under the authority of the Ministry of Forestry	Varies depending on sub-category (e.g., HL, HP, HPK)	~131	
Sanctuary Reserve Area and Nature Conservation Area	Kawasan Suaka Alam & Kawasan Pelestarian Alam	KSA & KPA	Preserving the biodiversity of flora fauna and their ecosystem	Forest preservation	~22	~5.9
Protection Forest	Hutan lindung	HL	Protecting the water system to prevent flooding, control erosion, protect seawater intrusion and maintain soil fertility	Forest protection	~30.3	~7.3
Permanent production forest	Hutan produksi tetap	HP	Providing forest products	Selective logging, clear cutting	~28.8	~25.3
Limited production forest	Hutan produksi terbatas	HPT	Low intensity	Limited logging, very selective logging, very limited clear cutting post-logging silvicultural treatments	~27.6	~10.7
Convertible production forest	Hutan produksi yang dapat dikonversi	HPK	Logging, agriculture estate, other uses	Clear cutting	~15.5	~8
Non-forest land	Areal Penggunaan Lain	APL			~59.4	
Non-forest land *with forest cover*	Areal Penggunaan Lain *With forest cover*	APL *With forest cover*			~8.17	~42.5

Source: Enrici, 2016

The designation of a forest as institutionally recognized can potentially offer an area some degree of protection from deforestation and degradation, although in a number of cases, protected and conserved forests have been left vulnerable. Nevertheless, non-institutionally recognized forest, or land with forest cover designated as land for other use (APL), is more susceptible to destruction, as evidenced by high rates of deforestation documented in these areas

(see Table 3.2). A study conducted in Sumatra found that deforestation in official forest land from 1990 to 2010 ranged from 24 to 29%. Primary forest that was designated as APL experienced a 96% loss in forest cover (Enrici, 2016). Non-institutionally recognized forest areas are intended for "other uses," making it easier to obtain licenses in these areas and thereby leaving them more vulnerable to conversion. As of 2013, MoF data indicates that approximately 8% of Indonesia's forest cover is designated as APL and therefore highly susceptible to conversion. In response to recent forest-related initiatives, there have been reports of official forest being converted to APL, thus making it easier for concessionaires to obtain licenses and exploit these lands no longer under the authority of the MoF (Enrici, 2016).

The existence of non-institutionally recognized forests further complicates matters of transparency, accountability, and the reporting of forest cover loss figures. The conflicting forest classifications have led to different deforestation rates from the MoF versus those from other sources. For example, in 2013, the MoF reported 124 million ha of official forest. Satellite data showed only 92.4 million ha of forest cover (Enrici, 2016). Examples of conflicting data can also be seen among the country's government institutions. For example, in 2012, the MoE documented 59.8 million ha of forest cover in Papua, but the MoF only identified 44.2 million ha (Enrici. 2016). Inconsistencies about which forests are considered official are further heightened by the use of different satellite imaging data and discrepancies over the definition of the word "forest." The MoF's definition of forest is "a specific territory determined and or decided by the government as a permanent forest," which is different from the FAO's definition (Enrici, 2016). These discrepancies over how to define what constitutes a forest is yet another example of the unnecessarily complex and confusing forest management practices taking part in Indonesia.

Although the moratorium represents an effort on part of the Indonesian government to curb emissions and reform forest governance, the forestry, palm oil, and mining industries lobbied heavily throughout the design phase of the Presidential Instruction to allow for sufficient loopholes so as to not meaningfully challenge the status quo (Fay, 2018). One way in which this manifested was through the conversion of institutionally recognized lands into APL, which as mentioned, are much more vulnerable to land-use change (Enrici, 2016). Evidence of this can be seen at both the national and sub-national level. In one case, 11 days after the moratorium was implemented, a Ministerial Decree called for the conversion of 11.2 million ha of official forest in the REDD+ pilot program of Central Kalimantan to non-institutionally recognized forest (APL) (Murdiyarso, 2011). Another example of this conversion taking place occurred in Kapuas Hulu, an area designated officially as a conservation forest with two large national parks. In 2013, evidence of approximately 5% of official forest estate in Kapuas Hulu being converted to land for other uses (APL) was recorded (Enrici, 2016). By way of decreasing the amount of land officially protected under the moratorium, stakeholders involved have benefitted by gaining easy access to lands newly available for conversion, regardless of whether they are considered primary forests or degraded.

The moratorium faces other criticisms regarding its ability to afford substantial protection to critical lands. One of these concerns with the moratorium is that much of the old-growth forests protected under the Instruction are in steep and inaccessible mountainous areas that are already unlikely to face much threat from human incursion. As mentioned previously, REDD+ payments must have ‘additionality’ by slowing imminent forest destruction and protecting carbon stocks that are currently threatened. However, it is the most imperiled forests—those surviving in the lowlands of Borneo and Sumatra—that are largely excluded from the

moratorium due to the fact that they have already been licensed and selectively logged (Edwards, 2012). These flat and easily accessible lands are vulnerable to conversion. Not including them in the moratorium could well subvert the additionality requirement for REDD+ payments and undermine the pilot project's ability to achieve verified reductions in carbon emissions (Edwards, 2012). Indonesia has the opportunity to expand agriculture onto abandoned lands that naturally lack forests, such as the vast Imperata grasslands (Edwards, 2012). In creating the degraded lands database, REDD+ conservationists aim to funnel agricultural practices onto lands such as these, but they must take care to precisely define what "degraded" entails, otherwise risk converting lands that have been hardly touched into plantations.

Another moratorium loophole is that existing permits for logging and agricultural operations in old-growth forests and peatlands can be extended. Clearing of these ultra-carbon-rich lands for the purpose of sugarcane production was not banned under the Presidential Instruction, even though it is one of the most rapidly expanding biofuel crops. Over the decade of 1998 to 2008, sugarcane agriculture increased in area by 26% globally, and by 76% in the World's Megadiverse Countries (those 17 countries that harbor the majority of Earth's species). Any expansion of sugarcane production in Indonesia would have severe consequences for its carbon emission levels. One analyst reported that clearance of old-growth forests for biofuel crops takes between 75 and 93 years to offset the lost carbon, while over 600 years are needed to offset deep peatland conversion (Edwards, 2012). Nevertheless, since 2006, the GoI has promoted the use of biofuels to decrease GHG emissions and increase energy security and job creation. The country's National Energy Policy called for biofuels to make up 15% of the country's energy mix by 2025, which has led to more land being allocated for biofuel development. This has worked to increase pressure on forested areas by stimulating the demand

for agricultural lands, thus conflicting with the country's REDD+ Strategy and other "green" policy objectives (Anderson, 2016).

Loopholes and critical issues with the moratorium are rooted in Indonesia's political, bureaucratic, and financial obstacles, as well as palm oil interests and the timber industry (Ekawati, 2019). Ambiguous terminology surrounding how forests are defined has left the moratorium open to interpretation and can be problematic for the enforcement of regulations (Enrici, 2016). One issue is the definition of the term 'primary' forests. As defined by the United Nations FAO, a 'primary forest' is a naturally regenerated forest of native tree species, in which there are no clearly visible indications of human activity and ecological processes are not significantly disturbed (Murdiyarso, 2011). In contrast, the MoF used the term 'primary natural forest' in the moratorium for the first time in Indonesian forestry policy, without clearly defining it. Although there is still no universally agreed upon definition for this term, the MoF has defined it to mean that 'no license applying to the area had ever been issued' (Murdiyarso, 2011).

The InPres introduced this new terminology in contrast to the term 'natural forest' used previously in the LoI, and it has been interpreted differently by various stakeholders. The use of 'primary' in the terminology enforces the conception that the moratorium includes only untouched, unmanaged, and undisturbed forests, which encompasses far less than what was interpreted under the original LoI (Murdiyarso, 2011). By design, the terminology used in the Presidential Instruction excluded disturbed, or 'secondary' natural forests. This difference in interpretation has huge implications, as a broader definition would more than double the area protected under the moratorium. Secondary forests have larger carbon stocks than both palm oil and fiber plantations, and in most cases, they support higher biodiversity levels. Thus, failure to

protect these secondary forests represents a lost opportunity to protect another 46.7 Mha of forests rich in carbon and biodiversity (Murdiyarso, 2011).

Another contested issue with the moratorium is that it sets out four exceptions to its provisions, three of which have the potential to undermine carbon emission reduction targets. Depending on how extensively the following license exceptions are awarded, the effectiveness of the moratorium could be retarded. The first exception is for any lands covered by applications for concessions licenses already 'approved in principle' by the MoF, regardless of their richness in carbon, biodiversity, or other ecosystem services (Murdiyarso, 2011). The exclusion of these licenses led to approximately 3.6 million hectares of primary forest and peatland being left out of the moratorium, an amount equivalent to 7.6% of the original moratorium area (Enrici, 2016). The second exception allows for the extension of existing licenses for forest exploitation under the condition that the license for the business remains valid, regardless of its environmental integrity and whether they are on high conservation value (HCV) forest at the time or not (Enrici, 2016).

The third exception is awarded to lands needed for 'vital' national development projects (including geothermal, oil and natural gas, electricity, rice, and sugarcane), regardless of their proximity to conservation areas. The moratorium must therefore be compatible with past presidential instructions, such as InPres No. 5/2011 on food security, which stipulates that the Minister of Agriculture expand the area of food production, and that the Minister of Forestry allow it to happen (Murdiyarso, 2011). The mention of electricity in this exception also includes coal mining, a major driver of deforestation responsible for an estimated 10% of deforestation in Indonesia as of 2005 (Enrici, 2016). From 2000 to 2014, Indonesia's coal exports quadrupled, and the country recently overtook Australia to become the world's largest exporter of thermal

coal (Dunne, 2019). Approximately 80% of Indonesia's coal is exported, but plans to increase the country's domestic coal-powered generation, and thus potentially close the "electricity gap" between its wealthy and less-connected islands are in effect (Dunne, 2019). This drive to increase domestic coal use and coal exports is another example of policies intended for economic development conflicting with strategies to curtail emissions from deforestation.

The fourth exception, Ecosystem Restoration Concessions (ERC), has the potential to be quite positive, as it creates new opportunities to enhance carbon stocks through reforestation. These concessions are critical to REDD+ implementation, as it allows REDD+ projects to be carried out in forests officially designated for production. Forests available for logging, mining, and agricultural concessions could therefore instead be converted into REDD+ projects, thus marking the first time in which production forests could be managed for restoration instead of exploitation (Enrici, 2016; Fay, 2018). Ecosystem restoration involves efforts to return deforested, degraded, or damaged production forests back to their biological equilibrium (Fay, 2018). ERCs would grant rights to the land for 65 years with a possible 35-year extension. These long-term concessions are intended to resolve some of the permanence issues that must be addressed before reforestation can become irreversible (Murdiyarso, 2011).

Some conservation organizations, and later, private corporations, began to see the opportunity to obtain ERCs, protect their ecosystems, and profit from avoided emissions. By the end of 2017, 16 ERCs had been issued, covering an area just over 600,000 hectares. However, a viable business model has failed to emerge, and efforts by conservation organizations to improve the design have yet to succeed. This is due in part to the fact that the contracts continue to be modeled on logging concessions where profit is based on timber extraction, instead of assisted natural regeneration of production forests (Fay, 2018). Although there are cases of ERCs

successfully rehabilitating critical lands, such as with peatland restoration in Central Kalimantan, most ERC concessions have not fared so well, with some having poor relations with communities inside and adjacent to their concessions (Fay, 2018).

Part 3: Lack of Local Community Involvement

REDD+ has fallen well short of its goals to involve all major stakeholders, particularly indigenous peoples and local communities. The LoI's design allowed significant space for independent participation by indigenous communities both in implementation and monitoring (Fay, 2018). In some instances, local communities have had their rights largely ignored as more powerful stakeholders get their way. While the recognition of "Indigenous Forests" (forests legally private and collectively owned by indigenous communities) was a milestone for the Widodo administration, they still fall under the jurisdiction of the MoEF in terms of regulating their management (Fay, 2018). This poses a problem due to the MoEF's weak governance capacity, especially because indigenous communities can be taken advantage of from exploitative corporations.

One example of this occurred in 2012, when leaders from nine villages held a protest outside the local legislature to oppose a palm oil concession that threatened to annex thousands of hectares of community forests. Regulations required an inventory of customary lands through a mapping process prior to any land being licensed, to protect the local community's lands. However, prior to this mapping taking place, the palm oil corporation had already begun its process of land acquisition, simply by paying the community a flat rate of USD $200 per hectare (Permitting Crime, 2014). This fell well short of the process required to properly evaluate land rights claims, especially because it failed to take communal ownership of the Indigenous Forest into account. By the time the mapping of customary lands was completed, it was too late—most

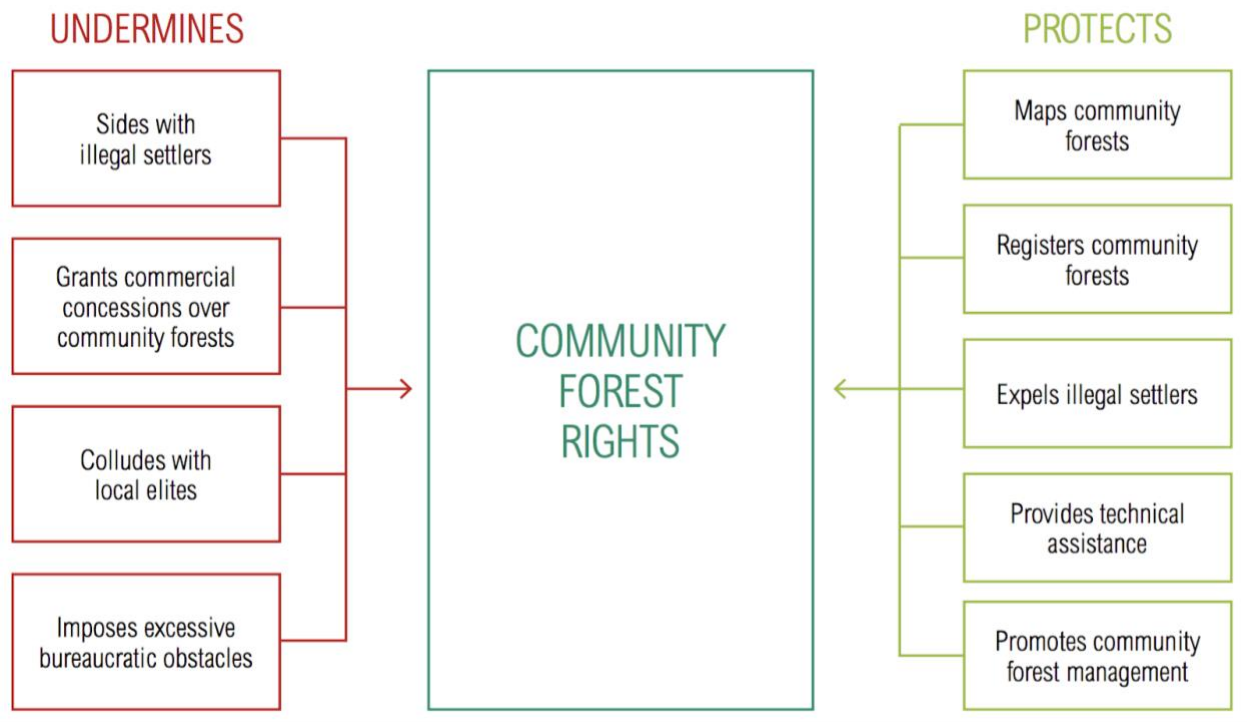
of the villagers had already conceded to selling their lands by that point (Permitting Crime, 2014). Not only were these communities quickly and secretly manipulated into selling their lands, but they were also barred from extracting any resources from the forests once they did, a restriction that was apparently brutally enforced by the corporation in charge (Permitting Crime, 2014). The MoEF's lack of capacity shines through in instances like these, where massive corporations exploit not only the resources, but the livelihoods of those civilians dependent on them.

Indonesia has a long history of not recognizing indigenous community rights. Prior to 2013, only 1% of forest cover in the country was recognized officially as community forest. Indonesian Forestry Law empowers the government to manage the forest, which allows it to continue allocating licensing concessions. This fact detracts from the rights of local communities, however, because they don't have rights over the lands they use and cannot exclude outside interests from exploiting the forest (Stevens, 2014). In Indonesia, community rights to lands are not only neglected, but government actions often have further negative impacts, as they undermine community rights even more by imposing excessive bureaucratic obstacles, granting concessions within community forest, and colluding with local elites to capture high-value forest resources (see Fig. 3.1) (Stevens, 2014). When community rights are not legally recognized by the government, it is far more likely that the lands these communities depend on will be degraded or destroyed (Stevens, 2014).

There is strong evidence in the literature that weak or no recognition from the government of community forest rights is tightly linked to high deforestation rates. In Indonesia, few potentially eligible communities have obtained legal recognition of their forest under Forestry Law. Of at least 42 million hectares of customarily held community lands, only one

million hectares are legally recognized by the government. Weak rights over their customary forests allow conversion licenses to be distributed over their lands, thus contributing to deforestation and GHG emissions (Stevens, 2014). There is also evidence that legal forest rights and government protection of those rights tend to lower deforestation. In Brazil, for example, a 6% higher deforestation rate outside of indigenous community lands contributed to 27 times more CO_2 emissions than were produced within the community forest. Furthermore, these community forests contain 36% more carbon per hectare than other parts of the Brazilian Amazon (Stevens, 2014). Thus, stronger ownership rights over customary lands contributes to forest health and protection, lessons that Indonesia could incorporate into its reforestation and forest rehabilitation efforts.

Figure 3.1: Government Actions That Can Impact Community Forest Rights



Source: Stevens, 2014

Although stipulated in the LoI that local communities would have a large say in how REDD+ activities in their districts were implemented, REDD+ projects have largely ignored local communities. A 2018 report intent on discovering locals' attitudes towards REDD+ found that in none of the four sites they visited had REDD+ activities commenced (Casse, 2019). The report claims that in general, villagers were "totally unacquainted with the implications of the REDD+ program," and that a large majority were unaware that crop farming was not allowed in REDD+ forests. In three out of four of these villages, deforestation rates had actually increased from 2010 to 2017 (Casse, 2019). A large concern with the REDD+ design is that it focuses disproportionately on restricting the activities of poor forest dwellers, instead of targeting more those who exploit forest resources and contribute to deforestation. Failing to involve local communities and recognize their rights has impeded REDD+ activities, for without knowledge of the projects and how they operate, as well as long-term incentives to be involved in the project, community-focused implementation projects are destined to fail.

Another significant problem for locals and their ability to maintain ownership of their lands is 'contested tenure,' or ambiguity of local land ownership and titles. Overlapping tenure occurs when licenses are issued that contradict the MoF official forest use designation, an issue that arises from discrepancies over which level of government has authority over the land. Tenure conflicts can exist for any combination of stakeholders; for example, palm oil licenses on community forest, smallholder palm oil encroachment onto REDD+ projects, or mining in National Parks (Enrici, 2016). Tenure conflicts are well documented and pervasive, and they occur for different reasons, including corruption, exceptions made to forest protection laws, and particularly because of the overlapping authority among different levels of government. Due to these underlying issues, Indonesia faces greater consequences than just tenure conflicts, for the

country's inability to formally and permanently designate protected areas is at stake. There are instances of licenses existing in protection and conservation forests, such as the 13 mining corporations that, as of 2011, were operating in a protection forest spanning 850,000 hectares (Enrici, 2016).

Issues arising from overlapping tenures are particularly relevant to local communities and their rights to the forest. Indigenous peoples' rights to the forest are already institutionally challenged in Indonesia, as evidenced by the fact that in 2014, the GoI recognized less than 1% of Indonesia's forest as community forest (Enrici, 2016). Across the country, forest-dependent communities have been living on and using official (MoF recognized) forest for generations, yet the land is generally considered to be owned by the state. Community land can be licensed by the state to private interests for exploitative purposes. In 2014 in West Kalimantan, for example, 59% of community forest was covered by palm oil concessions waiting to be activated (Enrici, 2016). Once activated, these communities lose all access to the lands that have maintained their livelihoods for generations, and they have very little power to oppose the conversion.

Part 4: Indonesia's Social Forestry Program and Its Challenges

One manner in which Indonesia has tried to alleviate tenure conflicts and provide more support for forest-dependent communities is through its Social Forestry Program. The roots of this program date back to the late 1990's, when the national forestry minister issued a first-of-its-kind decree, giving a community in Sumatra the right to manage 29,000 hectares of provincial forest to operate damar agroforests (Shahab, 2018). The pioneering social forestry community has seen many positive results, including increase in forest cover, food security, and income generation. These results demonstrated that social forestry could benefit many stakeholders at once and inspired the Widodo administration in 2014 to agree to distribute 12.7 million hectares

of forests to forest-dependent communities by 2019 (Shahab, 2018). This ambitious goal would expand social forestry designations from 1% to over 10% of the Forest Estate (Fisher, 2018). The concept emerged in Indonesia as a policy priority because of constant tenure issues questioning who has rights to land. Government and advocacy groups alike have supported social forestry due to its attractive win-win-win solution, acknowledging that it has the potential to improve rural livelihood opportunities, recognize communal rights, support conservation, and crucially, solve Indonesia's complex land conflicts (Fisher, 2018). The government's goals for social forestry have progressed more slowly than planned. As of 2018, only 1.75 million hectares worth of permits were distributed, amounting to 15% of the total target (Shahab, 2018). Given the difficulty of meeting its ambitious goal by 2019, the MoEF lowered its target from 12.7 million to 4.3 million hectares (Fisher, 2018).

Social forestry has started slowly because of complicated permit acquisition processes and the need for a constellation of community support mechanisms. Prior to 2016, a community seeking to obtain a social forestry permit was required to follow procedures similar to those necessary to acquire large concession licenses, a process both complex and expensive, lasting typically 180 days. To simplify this process and thus adjust for a more rights-oriented approach, the MoEF passed a new decree (83/2016) in 2016 to streamline the process (Fisher, 2018). Preparing the permits for proposal processes remains arduous for local communities, and often requires intervention from consultants to prepare needed documentation. The complicated permit requirements are impediments to local farmers, who may give up before completing the necessary organizational statutes, in which case no progress is made.

Another issue is that many communities that have received permits have yet to reap any benefits, for they lack an understanding of how to properly implement them (Shahab, 2018). The

MoEF has developed agencies to assist social forestry enterprises with human resources and business development. These support mechanisms are meant to help communities facilitate social forestry measures after permit issuance and focus on long-term business development. However, the support system itself faces internal challenges, as the number of counselors has dropped in recent years to only 15% of the number needed, a complication caused by recruitment regulation (Shahab, 2018).

Inconsistent boundaries and an inability of support systems to confer real authority represent two major barriers to local communities. In three village social forestry programs, inaccurate mapping data and differing perceptions of boundaries created misunderstanding, and resulted in more difficult policy negotiations (Fisher, 2018). Synchronizing the country's maps under the One Map Policy has continued to challenge the MoEF, for new and historical claims to land are often in conflict, which ends up impeding any project dependent on accurate and consistent boundaries. Remapping efforts could provide the first step toward transparency and accountability needed to manage social forestry sites.

The complex community permit process requires outside intervention for drafting designation plans to acquire permits. While the plans may be comprehensive, little attention is focused on supporting local institutions with the knowledge and authority to implement the plans themselves (Fisher, 2018). NGOs and other organizations can assist in mapping, designating, and drafting plans for permits. There are few support systems to incorporate local management practices into the plans, which undermines social forestry. One analyst reports that by failing to empower local institutions with the support and authority to monitor and manage conservation areas, these support systems are bound to run counter to the intended conservation goals of social forestry, and thus these programs will fail to reap any real benefits (Fisher, 2018). The role of

external institutions to help meet administrative requirements undermines local authority, as they may not assess local considerations and therefore neglect the natural resource management, memory, knowledge, and experience of local communities (Fisher, 2018). The lack of land management goals and capacity building means that social forestry can become "just another project with lofty development and societal goals, reinforcing the institutional arrangements it purports to challenge" (Fisher, 2018).

Part 5: Forest Conservation Versus Economic Growth

At the heart of all the forces impeding Indonesia's ability to meet its 2030 climate goals is the country's conflict between its conservation efforts and economic development aspirations. The nation's target of reducing GHG emissions by 29% while maintaining a 7% annual GDP growth rate designates Indonesia as a "green economy" on paper. The reality is that a significant gap exists between these national ambitions and what is actually happening on the ground (Anderson, 2016). Existing plans to further expand palm oil production is at odds with provincial efforts to reduce emissions. For Indonesia to see success as a green economy will require compromises and trade-offs among stakeholders (Anderson, 2016). Economic development rooted in exploitative practices still prevails, as indicated by the fact that 70% of Indonesia's total land area is under commoditization arrangements, although some are 'virtual' or not yet developed (Fisher, 2018). Exploitative corporations have the means to undermine conservation efforts. Different Ministries develop contradicting regulations. Extractive industries, backed by power and money, still prevail over conservation, as discussed below.

Policies meant to enforce REDD+ and inhibit deforestation are in direct conflict with Indonesia's policies regarding economic expansion. The inefficiency that results from this conflict of interest is a result of the country trying to balance increasing economic growth with

forest conservation. Policies created for mining and agriculture impede REDD+ implementation, for each sector issues policies in accordance with its own interests. Mining practices can only be conducted once forests are cleared, so the Ministry of Mining often pressures the MoEF to allocate forest areas to mining activities (Ekawati, 2019). These activities occur mostly in heavily forested areas and are frequently established illegally in areas designated for conservation or forest protection (Enrici, 2016). The Ministry of Agriculture encourages the development of more palm oil plantations, reducing forested areas that REDD+ could conserve. Plantation owners may encroach onto forested areas, an activity exacerbated by rising prices for palm oil (Ekawati, 2019). From 2000-2010, palm oil on Kalimantan expanded by 278%, and 90% of this occurred on forested land. Sumatra and Kalimantan, both known for their high levels of biodiversity, are the nation's islands with the highest rates of forest loss from plantation expansion. From 2000-2012, Sumatra lost 17.6% of its overall forest cover, and Kalimantan lost 7.9%. Global demand and high prices for timber have also encouraged the government to create policies allowing for intensive timber harvesting, a practice that deeply contradicts REDD+ efforts to reduce forest degradation (Enrici, 2016).

Topic 4: Opportunities for REDD+ in Indonesia

The setbacks Indonesia has suffered, as described in previous sections, have hampered efforts to achieve its carbon-related goals. Nevertheless, opportunities to make progress remain. This section identifies policies that hold the potential for success, if conducted and administered properly. Some of these policies include more comprehensive protection for peatlands and primary forests and the development of a single map to integrate data from across all ministries, thereby increasing transparency and reducing boundary disputes.

Part 1: Peatland Restoration and Protection

Five years ago, the majority of Indonesians did not understand the importance of peatlands and their difference from other kinds of land. However, after 2.6 million hectares of Indonesian land was scorched in 2015, 33% of which was on peatlands, the people gained a better understanding of what was at stake. The 2015 wildfires produced huge amounts of "toxic haze," enough to reach the neighboring countries of Singapore and Malaysia and sicken half a million people (Liu, 2018). Exacerbated by an El Niño year that caused an unusually severe dry spell, the fires raged on for months, and ultimately cost the country an estimated $16 million in economic losses (Jong, 2019, November 25). In January 2016, as a response to the devastating fires, President Widodo created the Peatland Restoration Agency (BRG), with the mandate of restoring 2.4 million hectares of peatlands in seven provinces by 2020 (Ekawati, 2019). BRG has worked to rewet peat ecosystems, facilitate and empower community economies, build demonstrations for integrated peat farming plots, and install water level monitoring devices (Ekawati, 2019). These activities have helped train over 150 local communities in the construction of canal blockings, land preparation without the use of draining and fire clearing

practices, and alternative livelihoods using restored peatlands to drive behavioral change (Liu, 2018). Peatland restoration efforts have been carried out in protected areas and unlicensed cultivation areas. While this is certainly a cause for optimism, restoration in permit or concession areas remains modest. According to 2019 data from BRG, between 2016 and 2018 the program restored 679,901 hectares, less than one third of the 2.4-million-hectare target (Ekawati, 2019).

Another positive outcome that arose from the ashes of the 2015 fires was Government Regulation No. 57/2016, which regulates peatland use based on peat depth and limits the drainage depth to 40 cm. Law enforcement to protect these peatlands was strengthened. In 2018, community-based firefighter groups were trained to prevent wildfires (Liu, 2018), which seemed to work, for forest loss on peatlands deeper than 3 meters dropped 80% in 2018 compared to the 2002-2016 average (Weiss, 2019). The decline may reflect the fact that the years 2016 to 2018 were relatively wet, reducing the likelihood of a strong fire season like the one in 2015. On the other hand, 2019 was another El Niño year, and the dry conditions contributed to a prolonged fire season, with the most intense fires observed since 2015 (Jong, 2019, November 25). By the close of November 2019, the fires had pumped out at least 708 million tons of CO_2, almost double the amount released by the higher-profile fires in the Brazilian Amazon (Jong, 2019, November 25), which will put Indonesia back on the list of top global emitters, and threaten to derail the country's commitment to cut its emissions. Indonesia therefore has a major opportunity to further improve its capacity to monitor and protect peatlands, as well as restore them, to prevent future fires from spreading into another catastrophe like this.

Part 2: Declining Deforestation Rates

A cause for optimism is Indonesia's declining deforestation rate, especially in 2017 and 2018 (deforestation rates for 2019 are at present not available). Deforestation of a total of

480,000 hectares of land occurred in 2017, followed by 440,000 hectares lost in 2018 (Wijaya, 2019). These numbers are edging closer to Indonesia's Nationally Determined Contributions to the Paris Climate Agreement, which aims to limit annual deforestation to 325,000 hectares between 2020 and 2030 (Wijaya, 2019). Indonesia reduced its primary forest loss by 40% in 2018, reaching its lowest rate since 2003. In areas protected by the moratorium, primary forest loss dropped 45% compared with 2002-2016 levels (Weisse, 2019). Several factors contributed to the 2018 reduction in deforestation rates, including strengthened law enforcement to prevent fires and land-clearing, peatland restoration efforts, the moratorium, and the absence of El Niño-driven hot spells (Wijaya, 2019). Nevertheless, there are exceptions to Indonesia's overall decline in deforestation. These include the provinces of East Kalimantan, Maluku, and West Papua, which in 2018 experienced respectively a 43%, 40%, and 36% increase in primary forest loss compared to 2017. In Central Kalimantan alone, a total of 1,495,745 ha of primary forest was lost in 2018 (Wijaya, 2019). These are significant exceptions to the decline in deforestation, particularly when taking into consideration the fact that 2018 suffered little from deforestation induced by wildfires. Data on primary forest loss in 2019 is still unavailable, but deforestation rates will be higher, given the months of wildfires endured that year. Analysts evaluating the moratorium report that it is doing little to deter primary forest loss, for it yielded only a 5% decrease in primary forest loss compared to areas outside of the moratorium (Ekawati, 2019).

Part 3: The One Map Initiative

Facts on the ground affect Indonesia's forest governance, including boundary disputes, tenure issues, and contradictory land classifications by various government levels. Through the country's One Map Initiative (OMI), encouraged by President Yudhoyono in 2010, Indonesia has an opportunity to resolve geographic ambiguities. The OMI was created in response to

concerns from the REDD+ Task Force about how to accurately create the Indicative Moratorium Map (IMM) necessary to institute the beginning of the moratorium on new licensing concessions. Discrepancies in land-cover maps among different industries made publishing the IMM a challenge. The OMI was developed to improve communication among government ministries/agencies, as well as between GoI agencies and indigenous communities or civil society organizations (Mulyani, 2017). Catalyzed by REDD+ policy, the OMI signifies a move towards greater transparency and public participation in an effort to embody the principles of open democracy. The government's commitment to store, curate, and integrate all spatial and non-spatial information from across ministries and levels of government in one place, as well as providing the public free access to this portal, signifies a major shift in established institutional practice. During just the map-making exercise, the OMI promoted a number of positive governance reforms, including better coordination among government ministries, greater transparency and public participation, improved cost efficiency and forest data quality, and the protection of indigenous lands (Mulyani, 2017). These positive outcomes inspired President Widodo in 2015 to accelerate the implementation of the OMI and place it high on the National Development Priority list.

The OMI helps REDD+ by its effort to clarify forest land categories where REDD+ activities can take place. Transparency of forest data reduces the risk that REDD+ sites will be undermined later by overlapping concessions. According to analysts, accurate forest land-cover maps are essential to the efficacy of REDD+ implementation (Mulyani, 2017). The OMI is a means for Indonesia to address forest governance problems, but only if it is conducted thoroughly and transparently. After almost eight years since the OMI was proposed, it was finally released in December of 2018 by President Widodo. At the launch, Widodo described the

Initiative, saying, “One reference, one database, and one geoportal, which essentially is set to prevent any overlap, to give certainty, to give clarity, and to have consistency in building this nation” (Gokkon, 2018). Overlapping land-use permits and boundary disputes are major drivers of illegal industries operating in prohibited areas. The OMI provides hope for greater protection of primary forests and for deterring illegal palm oil, mining, and timber operations in unlicensed areas.

Although the OMI was designed to be transparent and open to the public, recent developments have shown that the government maintains restricted access to spatial data (Arumingtyas, 2017). The government has been particularly secretive about maps related to the extractive industries, and this appears to extend into the OMI as well. The GoI is also reportedly drafting regulations that will govern data sharing and determine who has access to the unified database, an act that undermines the government’s stipulated efforts to be more transparent (Gokkon, 2018).

The GoI has failed to include maps of indigenous territory in the OMI, even though some of these territorial maps were already recognized by lower-level authorities. The national government claims that these customary lands will be included once recognized by local governments, an arduous and time-consuming process, requiring the passage of a bylaw in each of the hundreds of jurisdictions where indigenous lands occur (Gokkon, 2018). The exclusion of indigenous lands from maps has drawn criticism from indigenous rights activists, who argue that it undermines the Initiative’s stated goal of resolving land-use conflicts, many of which involve disputes over indigenous lands.

Current maps do include customary *forests*, however, which are areas recognized by the MoEF as being a part of the country’s Social Forestry Program aimed at increasing land access

and ownership for local communities. According to the map, as of 2018, a mere 77 square miles of land was granted to about 20 different communities under the customary forest program, a figure that falls short of the goal to give local communities access to a combined 48,700 square miles of customary forest (Gokkon, 2018). The failure of the OMI to maintain transparency and inclusion of all relevant data can only be described as a missed opportunity to get the country on the path towards more effective forest governance.

Despite the Indonesian government's decision to forfeit the OMI's transparency and restrict the public's access to the data it contains, the creation and publication of one integrated database to record all relevant forestry data is a success. Synchronizing forestry data from across all ministries and differing levels of government has forced officials to coordinate and compromise in ways that Indonesian forest governance has never experienced before, creating the opportunity to reduce barriers that arise from instances of overlapping authority. Overcoming boundary disputes and tenure problems through the creation of the OMI represents a significant step towards more effective forest governance. Releasing the complete OMI and integrated database to all members of the public, as well as including the nation's most marginalized people on the map, are further steps that ought to be taken to provide the transparency needed to improve Indonesia's weak forest governance.

Topic 5: Recommendations for Improving Forest Governance in Indonesia

This section discusses recommendations to improve the efficacy and capacity of Indonesia's REDD+ program, as well as possible revisions of other forestry and non-forestry related regulations. If Indonesia fails to institute a number of critical reforms, it is unlikely that it will achieve its conservation, emissions, or environmental protection goals. As a country with the ability to change the course for tropical forest conservation around the world, the GoI can decide whether to continue enabling resource-extractive industries over the wellbeing of many of its citizens and the entire planet.

Recommendation 1: Recreate the National REDD+ Agency

The most important recommendation is to recreate an independent REDD+ Agency to improve REDD+ implementation. The first step would be to separate the REDD+ Agency from under the MoEF's umbrella and allow the Agency to once again become a regulatory body. Prior to Widodo absorbing the Agency into the MoEF, the Agency developed important relationships with many stakeholders, created many important reforms for instituting REDD+ policies, and became an institution that local communities could approach to present their needs (Fay, 2018). Hiding the Agency under the regulatory power of the MoEF essentially decreased the Agency's authority and its capacity to monitor how and if new regulations were being implemented on the ground. If the REDD+ Agency could be independent from and parallel in authority to other Ministries, it could be run more efficiently with greater authority to enforce its regulations. If closing moratorium loopholes and enforcing greater sanctions are priorities, the REDD+ Agency with no other conflicting incentives has the ability to accomplish its goals (Fay, 2018).

Even without a new REDD+ Agency that could integrate action plans into the programs of the Directorate General of Climate Change, Indonesia could strengthen the legality and legitimacy of the REDD+ National Strategy. Incorporating REDD+ SRAP into regional development programs would make the action plans more accessible to people on the ground and help implement REDD+ on a regional level (Ekawati, 2019). Currently, only 11 of 34 provinces have formulated REDD+ SRAP, a number that after 10 years of REDD+ operating in Indonesia should be much higher (Ekawati, 2019). A new REDD+ Agency could crack down on corruption and other illegal activities through more policing and greater enforcement of regulations. Punishing actors with ties to corruption with sanctions could set an example for more controlled forest governance.

Recommendation 2: Revise the Moratorium

Revising the moratorium to close its many loopholes could change the status quo, particularly for the extractive industries that lobbied heavily to permit those loopholes. One analyst reported that had the moratorium not been in place between 2011 and 2015, emission rates would likely have only been 1.0-2.7% higher than with the moratorium in effect, a clear measure of its ineffectiveness (Anderson, 2016). This estimate is based on the fact that a majority of emissions from deforestation came from outside existing concessions and areas protected by the moratorium. To be effective at reducing emissions from deforestation and degradation, a moratorium ought to include all lands classified as forests, whether institutionally recognized or not, so as to include secondary forests (Enrici, 2016). If a REDD+ Agency could manage *all* forests and their concessions, it could address the full range of encroachment, land classification conflicts, tenure disputes, unmonitored deforestation, and indigenous rights.

One way to enhance the moratorium would be to extend its scope beyond 'primary' forests, which has been interpreted to mean only land untouched by humans. By not including all natural forests, as was agreed upon in the LoI, tens of millions of hectares of secondary forests were left open to new licenses for conversion to plantations. A majority of these secondary forests fall within indigenous territories, leading to tenure disputes, encroachment, and local communities being forced off their lands (Fay, 2018). Revising the IMM to include both licensed and unlicensed secondary and logged-over forests would be the next major step, beginning with forest on peat and then covering forest found on mineral soils, which have high conservation values (HCV) for biodiversity, watershed protection, and other ecosystem services (Murdiyarso, 2011).

Another step to enhance the moratorium would be to correct misclassifications of forest types and update maps with dated information. Areas of peat and primary forests that have not been licensed for protection could be rezoned and included in the moratorium. Another task is to review existing licenses for ongoing operations for compliance with environmental and other regulations, or risk being suspended or revoked. A review process could influence developers who so far may have ignored national land use regulations.

Another step would be to create an environmental impact assessment to document development projects on peatlands that have significant adverse impacts on the environment. In this way, stakeholders responsible for environmental damage can be held accountable, while those involved in ecosystem restoration can be applauded (Murdiyarso, 2011).

In summary, removal of unnecessary ambiguity would improve outcomes. When there are conflicting regulations, the governing body has the option to choose among them. Agency choice over when to enforce restrictions and when to turn a 'blind eye' is propagated by the

contradictory and confusing language and classifications present in the moratorium. The classification system of "official" forest under the MoF (institutionally recognized), creates undue complexity for regulations, and contributes further to weak institutional capacity because authorities don't know which forested areas are recognized as official, and which are not. The ambiguity also allows for more opportunities for corruption and mismanagement of resources, for those in charge may not even know who is out of bounds and who is not.

The definition of "primary" forest needs to be firmly established in the moratorium as well, for now there are discrepancies concerning whether it means untouched lands or unlicensed lands. As defined by the UN FAO, primary forests are those that have had minimal human disturbance, a definition that could firmly protect old-growth, untouched forests, regardless of whether or not they've been licensed in the past. Past licenses awarded on primary lands could be revoked to deter the expansion of further destruction of irreplaceable old-growth forests.

"Secondary" forests must also be redefined and separated from the term "degraded," which insinuates land too far gone to be restored. Secondary forests, making up over half of Indonesia's forested areas, are in dire need of protection. Often, they have been hardly disturbed by human activities, and have the potential to be fully restored if given permanent protection. By classifying these forests, which continue to support massive amounts of biodiversity and carbon storage, as degraded, Indonesia is essentially awarding half the country's forests to extractive industries. An independent REDD+ Agency could revise the moratorium so as to decrease deforestation and actually reduce emissions.

Recommendation 3: Focus on Primary Forests and Peatlands

Indonesia's vulnerability to climate forces such as El Niño events makes taking preventative actions to diminish adverse climate effects crucial. These actions include

monitoring and protecting peatlands, as well as preventing and extinguishing wildfires. One policy option could be revoking any concessions on peatlands and preventing future illegal encroachment onto these carbon-rich lands. For peatlands that have been drained for agricultural purposes, reducing the risk of fires breaking out could require some level of restoration and rewetting of the land. Slash-and-burn clearing practices, which can easily lead to fires spiraling out of control, can be replaced by innovative land clearing that does not use fire or peatland drainage practices. Draining peatlands can be prevented regardless of the peat's depth, for the drainage in itself is a huge emitter, and exposed peat is a catastrophe waiting to happen. These agricultural practices can be monitored to ensure they are following protocol, which requires greater funding and institutional capacity. Further preventative measures such as training local communities in firefighting practices and providing more funding to police remote peatlands could improve outcomes. Greater capacity and foresight to prevent wildfires has the ability to save Indonesia billions of dollars, especially as the climate becomes more volatile. Extended dry seasons pose a huge danger to Indonesia's people, biodiversity, and economy, and therefore any effort that can be taken to reduce the chances of more fires like those in 2015 and 2019 should be taken.

Recommendation 4: Revise the One Map Initiative

The OMI development of one database and one map to integrate what was once at least 85 disparate official maps is a feat to be applauded. The One-Map policy is an absolutely essential component for any competent forest management practices to designate where boundaries are drawn, to whom permit licenses belong, and to denote each type of land use. Despite its release in 2018, public access to the database and map is restricted, reducing transparency and increasing suspicions that certain stakeholders have more leverage than others

over how the mapping process is conducted. The OMI has the potential to bridge communications and spatial data for all relevant ministries and civil society, but only if revised to fix these issues of complete access and representation. Only then can the OMI function as it has been intended to since its inception, which is to resolve boundary disputes and prevent exploitation of forests by making protected areas clearly, and unambiguously, defined as protected.

Recommendation 5: Revitalize the Social Forestry Program

For REDD+ to be successful in Indonesia, much more attention must be paid towards the local communities losing land access and disputing tenure claims. Without the support of district governments in instituting REDD+ reforms, actions to follow new regulations may not take place, thus undermining national policies. Clear communication among district and regional governments and the REDD+ Agency could enhance program implementation by creating an entry point for communities to discuss land reform and distribution. This was an essential component of REDD+ outlined in the LoI, yet it never fulfilled its true potential. Developing a space for open discussion that involves all stakeholders will certainly take time, effort, and unique approaches to different communities, for broad, national blanket policies have been largely ineffective in motivating these communities.

For example, REDD+ and the country's Social Forestry Program have many aligned goals and together they may make a bigger impact than apart. An important issue with REDD+ projects near community lands thus far has been a lack of permanence. Given the common encroachment and land dispute issues plaguing local and indigenous communities, some residents may have been hesitant to develop long-term sustainable land use practices for fear of their land being annexed by large corporate forces. The Social Forestry Program is a way for

communities to safeguard land from these outside forces by providing community ownership over lands that can then be developed into sustainable agroforestry or ecotourism spaces. Ownership can create a means of long-term income generation that is not dependent on limited resource extraction. In many ways, this sounds like REDD+'s vision to protect and manage forests in innovative ways that allow for small-scale development amidst rehabilitation efforts. While the Social Forestry Program has had some successes, the program lacks funding, and the support systems needed to incorporate locals into community planning and action are understaffed. Furthermore, even when properly staffed, these institutions often fail to teach locals the technical skills needed to develop alternative revenue streams, leaving them bound to fail.

With proper management and oversight, these problems can be resolved. This calls for increased funding for the program to acquire the capacity to reach local communities and expend the needed effort to properly communicate how the program works and what benefits the community could receive by following it. At present, the program needs annual funding of at least USD $57 million, yet currently it receives just half this amount (Jong, 2019, January 25). One way to increase funding for the Social Forestry Program would be to tap into the Reforestation Fund. Both programs, at their core, are about rehabilitating critical land in sustainable ways. Therefore, incorporating local participation can only complement the reforestation efforts of the RF. With local communities motivated to restore and protect their lands, the impact will likely be greater than any land rehabilitation project that doesn't involve local residents. The Social Forestry Program also has the ability to increase these communities' welfare. By allowing communities long-term authority over their own lands, it motivates them to continue rehabilitation efforts and create alternative, sustainable land use practices, such as

beekeeping or resin harvesting. Ownership over lands instills pride over lands, and when communities are proud, they have something to protect. Without it, residents are likely to continue operating on small-scale plantations or extractive industries, which provide short-term income. In order to motivate a complete change in lifestyle, these communities need proper incentives, support, and trust in the government. This may take a long time to build, but with a new REDD+ Agency to administer this support and an open line of communication with government forces, the Social Forestry Program, along with the Reforestation Fund's efforts and those of REDD+, have the potential to see far greater success than they have thus far in protecting and rehabilitating Indonesia's 'priceless' tropical forests.

While working in Indonesia in the Summer of 2018 to quantify carbon stores on Buton Island near Sulawesi, I was involved in efforts to bring the Social Forestry Program to communities. In a small, one-mile community named Labundo-bundo, ownership of surrounding lands was being distributed to members of the community. For protecting the natural forests instead of clearing them for coconut or palm oil plantations, the communities were promised to be awarded through REDD+ financing. In addition, the village's women, who are critical for bringing the benefits of new community developments into the home, were heavily consulted on new strategies for alternative revenue streams into the community. If individuals or groups had ideas for creating a new business or sustainable agroforestry project, they could consult REDD+ administrators for a loan to get their project started. In this way, we worked from the ground up, encouraging communities to motivate themselves to look beyond the limited forest resources to new means for income generation that could sustain these people in the long term. Once the people had a reason to conserve their biodiversity, and could maintain healthy livelihoods without its exploitation, a sense of pride in their lands and their work was born.

Regardless of the structural problems plaguing Indonesia's efforts to conserve forests and reduce emissions, seeing the pride of a community involved with rehabilitating the lands that have sustained them for centuries gave me hope. With enough money, capacity, and motivation, communities all across Indonesia can be reached and encouraged to join the movement to save Indonesia’s imperiled forests. Community involvement can have a profound impact on REDD+ progress. The challenge is less about national policies than it is implementing these policies in small local communities across the thousands of islands that make up the unique and irreplaceable ecosystems of Indonesia.

BIBLIOGRAPHY

Adams, E. (2012). World Forest Area Still on the Decline. In L. Brown (Author), *The Great Transition*. Retrieved from: http://www.earth-policy.org/?/indicators/C56/

Anderson, Z., Kusters, K., McCarthy, J., & Obidzinski, K. (2016). Green growth rhetoric versus reality: Insights from Indonesia. *Global Environmental Change*, *38*, 30-40. https://doi.org/10.1016/j.gloenvcha.2016.02.008

Arumingtyas, L. (2017, August 1). One Map Policy, Data Access Turns Off Limited? Retrieved from Mongabay website: https://www.mongabay.co.id/2017/08/01/kebijakan-satu-peta-akses-data-ternyata-tetap-terbatas/

Asian Financial Crisis in Indonesia. (2010). Retrieved from Indonesia-Investments website: https://www.indonesia-investments.com/culture/economy/asian-financial-crisis/item246

Barr, C., Dermawan, A., Purnomo, H., & Komarudin, H. (2010). Financial governance and Indonesia's Reforestation Fund during the Soeharto and post-Soeharto periods, 1989-2009: a political economic analysis of lessons for REDD+. *Occasional Paper, 52.* CIFOR, Bogor, Indonesia.

Cacho, O., Lipper, L., & Moss, J. (2013). Transaction costs of carbon offset projects: A comparative study. *Ecological Economics*, *88*, 232-243. https://doi.org/10.1016/j.ecolecon.2012.12.008

Caldecott, J., Rizki, D., Rinne, P., & Halonen, M. (2013, November 8). Indonesia-Norway REDD+ Partnership - Second Verification of Deliverables. *Gaia Consulting*. Retrieved from: https://www.regjeringen.no/contentassets/78ef00f5b01148e2973dca203463caee/indonesia-norway-reddsecond-verification-final-report.pdf

Casse, T., MilhÃ¸j, A., Nielsen, M. R., Meilby, H., & Rochmayanto, Y. (2019). Lost in implementation? REDD+ country readiness experiences in Indonesia and Vietnam. *Climate and Development*, *11*(9), 799-811. https://doi.org/10.1080/17565529.2018.1562870

Chao, S. (2012). FOREST PEOPLES: Numbers across the world. *Forest Peoples Programme*, 1-27. Retrieved from: http://www.forestpeoples.org/sites/fpp/files/publication/2012/05/forest-peoples-numbers-across-world-final_0.pdf

Clements, G. R., Sayer, J., Boedhihartono, A. K., Venter, O., Lovejoy, T., Pin Koh, L., & Laurance, W. F. (2010). Cautious Optimism over Norway's Indonesia REDD Pact. *Conservation Biology*, *24*(6), 1437-1438. https://doiorg.ezproxy.lib.utexas.edu/10.1111/j.1523-1739.2010.01584.x

Collin, R. W., & Schwartz, D. A. (2011). Emissions Trading. In M. Shally-Jensen (Ed.), *Environment, Science, and Technology: Encyclopedia of Contemporary American Social Issues*, (Vol. 4, pp. 1365-1369). ABC-Clio

Dernbach, J. C. D. (2010). Cap-and-Trade Legislation. In C. Laszlo, K. Christensen, D. Fogel, G. Wagner, & P. Whitehouse (Eds.), *The Business of Sustainability: Berkshire Encyclopedia of Sustainability* (Vol. 2, pp. 50-54). Berkshire Publishing Group.

Dunne, D. (2019, March). The Carbon Brief Profile: Indonesia. Retrieved December 9, 2019, from Carbon Brief website: https://www.carbonbrief.org/the-carbon-brief-profile-indonesia

Edwards, D., Koh, L. P., & Laurance, W. (2012). Indonesia's REDD+ pact: Saving imperilled forests or business as usual? *Biological Conservation*, *151*(1), 41-44. https://doi.org/10.1016/j.biocon.2011.10.028

Ekawati, S., Subarudi, Budiningsih, K., Sari, G. K., & Muttaqin, M. Z. (2019). Policies affecting the implementation of REDD+ in Indonesia (cases in Papua, Riau and Central Kalimantan). *Forest Policy and Economics*, *108*. https://doi.org/10.1016/j.forpol.2019.05.025

Enrici, A., & Hubacek, K. (2016). Business as usual in Indonesia: governance factors affecting the acceleration of the deforestation rate after the introduction of REDD+. *Energy, Ecology, and Environment*, *1*(4), 183-196. https://doi.org/10.1007/s40974-016-0037-4

Evans, S. (2015, September 25). Indonesian pledge suggests no increase in emissions to 2030. Retrieved from Carbon Brief website: https://www.carbonbrief.org/indonesian-pledge-suggests-no-increase-in-emissions-to-2030

Fay, C., & Denduangrudee, H.-M. S. (2018). An uneven path toward rights and REDD+ in Indonesia. *Center for Global Development*. Retrieved from: https://www.cgdev.org/sites/default/files/uneven-path-toward-right-redd-indonesia.pdf

Fisher, M.R., Moeliono, M., Mulyana, A., Yuliani, E.L., & Adriadi, A. (2018). Assessing the New Social Forestry Project in Indonesia: Recognition, Livelihood and Conservation? *International Forestry Review*, *20*(3), 346-361. https://doi.org/10.1505/146554818824063014

Forest monitoring designed for action. (2018). Retrieved from Global Forest Watch website: https://www.globalforestwatch.org/

Gokkon, B. (2018, December 13). One map to rule them all: Indonesia launches unified land-use chart. Retrieved from Mongabay website: https://news.mongabay.com/2018/12/one-map-to-rule-them-all-indonesia-launches-unified-land-use-chart/

Hermansen, E. A. T., & Lahn, B. (2019, September 17). Climate neutrality the Norwegian way: Carbon trading? Retrieved from CICERO website: https://cicero.oslo.no/no/posts/nyheter/climate-neutrality-the-norwegian-way-carbon-trading

Holloway, V., & Giandomenico, E. (2009, December 4). The History of REDD Policy. *Carbon Planet*, 1-20.

Hurowitz, G. (2018). Here's what deforestation looks like in 2019 -- and what we can do about it. Retrieved from Mighty Earth website: http://www.mightyearth.org/heres-what-deforestation-looks-like-in-2019-and-what-we-can-do-about-it/

Indonesia's coastlines shrink as sea levels rise. (2019, July 9). Retrieved from The Straits Times website: https://www.straitstimes.com/asia/indonesias-coastlines-shrink-as-sea-levels-rise

Indrarto, G. B., Murharjanti, P., Khatarina, J., Pulungan, I., Ivalerina, F., Rahman, J., Prana, M. N., Resosudarmo, I. A. P. & Muharrom, E. (2012). The Context of REDD+ in Indonesia: Drivers, agents and institutions. *Working Paper, 92*. CIFOR, Bogor, Indonesia.

Jong, H. N. (2019, November 25). Indonesia fires emitted double the carbon of Amazon fires, research shows. Retrieved from Mongabay website: https://news.mongabay.com/2019/11/indonesia-fires-amazon-carbon-emissions-peatland/

Jong, H. N. (2019, February 20). Indonesia to get first payment from Norway under $1b REDD+ scheme. Retrieved from Mongabay website: https://news.mongabay.com/2019/02/indonesia-to-get-first-payment-from-norway-under-1b-redd-scheme/

Jong, H. N. (2019, January 25). Funds tripled and Target slashed, but Indonesia Still off Pace for Reforestation. Retrieved December 9, 2019, from Mongabay website: https://news.mongabay.com/2019/01/funds-tripled-and-target-slashed-but-indonesia-still-off-pace-for-reforestation/

Kartodihardjo, H., Nagara, G., & Wahib Situmorang, A. (2015). Transaction Cost of Forest Utilization Licenses: Institutional Issues. *JMHT, 21*(3), 184-191. https://doi.org/10.7226/jtfm...213184

Kimmelman, M. (2017, December 21). Jakarta Is Sinking So Fast, It Could End Up Underwater. Retrieved from The New York Times website: https://www.nytimes.com/interactive/2017/12/21/world/asia/jakarta-sinking-climate.html

Koh, L. P. (2009). Calling Indonesia's US$13 Billion Bluff. Conservation Biology, 23(4), 789. https://doi-org.ezproxy.lib.utexas.edu/10.1111/j.1523-1739.2009.01270.x

Kyoto Protocol to the United Nations Framework Convention on Climate Change. (1998). *United Nations*. https://unfccc.int/resource/docs/convkp/kpeng.pdf

Liu, L. (2018). Preventing Peatland Fires in Indonesia. Retrieved from UN-REDD Programme website: https://www.10year.un-redd.org/indonesia-peatlands

Mulyani, M., & Jepson, P. (2017). Does the 'one map initiative' represent a new path for forest mapping in indonesia? assessing the contribution of the REDD+ initiative in effecting forest governance reform. *Forests, 8*(1), 14. http://dx.doi.org.ezproxy.lib.utexas.edu/10.3390/f8010014

Murdiyarso, D., Dewi, S., Lawrence, D. and Seymour, F. (2011). Indonesia's forest moratorium: a stepping stone to better forest governance? *Working Paper, 76*. CIFOR, Bogor, Indonesia.

Newell, R., Pizer, W., & Raimi, D. (2014). Carbon Markets: Past, Present, and Future. *Annual Review of Resource Economics*, *6*(1), 191-215. https://doi.org/10.1146/annurev-resource-100913-012655

Newton, P., Miller, D. C., Ateenyi Byenkya, M. A., & Agrawal, A. (2016). Who are forest-dependent people? A taxonomy to aid livelihood and land use decision-making in forested regions. *Land Use Policy, 57*, 388-395. https://doi.org/10.1016/j.landusepol.2016.05.032

Our Work. (2019). Retrieved from UN-REDD Programme website: https://www.un-redd.org/how-we-work-1

Permitting Crime: Palm oil expansion and illegal logging in Indonesia's REDD pilot province. (2015, January 23). Retrieved from REDD-Monitor website: https://redd-monitor.org/2015/01/23/permitting-crime-palm-oil-expansion-and-illegal-logging-in-indonesias-redd-pilot-province/

PERMITTING CRIME: How palm oil expansion drives illegal logging in Indonesia. (2014, December). Retrieved from EIA International website: https://eia-international.org/wp-content/uploads/2014-Permitting-Crime.pdf

Phelps, J., Friess, D. A., & Webb, E. L. (2012). Win-win REDD+ approaches belie carbon-biodiversity trade-offs. *Biological Conservation, 154*, 53-60. http://dx.doi.org/10.1016/j.biocon.2011.12.031

REDD in Indonesia. (2013, August). Retrieved from the REDD Desk website: https://theredddesk.org/countries/indonesia

REDD+ Reducing Emissions from Deforestation and Forest Degradation. (2020). Retrieved from the UN FAO website: http://www.fao.org/redd/countries/en/

Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007. (2008). *United Nations Framework Convention on Climate Change.* Retrieved from: https://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf

Rising sea levels threaten 23 million in Indonesia's coastal cities by 2050: Study. (2019, November 5). Retrieved from The Jakarta Post website: https://www.thejakartapost.com/news/2019/11/05/rising-sea-levels-threaten-23-million-in-indonesias-coastal-cities-by-2050-study.html

Sari, A. P. (2007). Indonesia and Climate Change: Current Status and Policies. *PEACE.* Retrieved from: https://siteresources.worldbank.org/INTINDONESIA/Resources/Environment/ClimateChange_Full_EN.pdf

Scales, I. (2016). Tropical Forests, Politics, and Power: From Colonial Concessions to Carbon Credits. *Brown Journal of World Affairs*, *23*(2), 191-206. Retrieved from: http://ezproxy.lib.utexas.edu/login?url=https://search.proquest.com/docview/2097596066?accountid=7118

Shahab, N. (2018, October 29). Taking stock of Indonesia's social forestry program. Retrieved from CIFOR Forest News website: https://forestsnews.cifor.org/58344/taking-stock-of-indonesias-social-forestry-program?fnl=en

Stevens, C., Winterbottom, R., Springer, J., & Reytar, K. (2014). Securing Rights, Combating Climate Change: How Strengthening Community Forest Rights Mitigates Climate Change. *World Resources Institute.* Retrieved from: https://wriorg.s3.amazonaws.com/s3fs-public/securingrights-full-report-english.pdf

Sustaining forests: a development strategy. (2004). *Agriculture and rural development.* Washington, D. C., USA: The World Bank. Retrieved from: http://documents.worldbank.org/curated/en/424531468781760578/Sustaining-forests-a-development-strategy

Singh, Minerva and Bhagwat, Shonil A. (2013). Tropical agricultural production, conservation and carbon sequestration conflicts: oil palm expansion in Southeast Asia. In: Fang, Zhen (Ed.), *Biofuels - Economy, Environment and Sustainability.* Rijeka, Croatia: Intech, pp. 39–71.

Visseren-Hamakers, I. (2012). Will REDD+ work? The need for interdisciplinary research to address key challenges. *Current Opinion in Environmental Sustainability*, *4*, 590-596. http://dx.doi.org/10.1016/j.cosust.2012.10.006

Waskey, A. J. (2012). Carbon Permits. In S. G. Philander (Ed.), *Encyclopedia of Global Warming and Climate Change* (2nd ed., Vol. 1, pp. 203-205). Sage Publications, Inc.

Weisse, M., & Goldman, E. D. (2019, April 25). The World Lost a Belgium-sized Area of Primary Rainforests Last Year. Retrieved from World Resources Institute website: https://www.wri.org/blog/2019/04/world-lost-belgium-sized-area-primary-rainforests-last-year

Wijaya, A., Samadhi, T. N., & Juliane, R. (2019, July 24). Indonesia Is Reducing Deforestation, but Problem Areas Remain. Retrieved from World Resources Institute website: https://www.wri.org/blog/2019/07/indonesia-reducing-deforestation-problem-areas-remain

Wu, D. P. (2012). Carbon Offsets. In S. G. Philander (Ed.), *Encyclopedia of Global Warming & Climate Change* (2nd ed., Vol. 1, pp. 201-203). Sage Publications, Inc.

Zilberman, D., Lipper, L., & McCarthy, N. (2008). When could payments for environmental services benefit the poor? Environment and Development Economics, 13, 255-278. https://doi.org/10.1017/S1355770X08004294

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